THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2.

Telegrams: LANCET, RAND, LONDON. Telephone: TEMPLE BAR 7228 and 7229

No. XXIV. OF VOL. I., 1934. LONDON, SATURDAY, JUNE 16, 1934 Pp. 120—Price 1s.
No. 5781. Vol. CCXXVI. Founded 1823. PUBLISHED WEEKLY. Registered as a Newspaper. Annual Subscription: Inland £2 2s. Abroad £2 10s.

OXFORD MEDICAL PUBLICATIONS.

SEE PAGE 2

SURGERY OF THE THORAX.

By T. HOLMES SELLORS,

D.M., M.Ch., M.A. (Oxon), F.R.C.S. (Eng.), Assistant Surgeon, City of London Hospital for Diseases of the Heart and Lungs; Assistant Surgeon, Queen Mary's Hospital for the East End; Surgeon to Out-patients, Royal Waterloo Hospital.

140 Illustrations, including 11 Plates in Colour. 22s. 6d. net.

MEDICAL PRESS.—"The best monograph on the surgery of the thorax that has been written."

Constable & Co., 10/12, Orange-street, London, W.C.2.

ALL FRENCH MEDICAL WORKS AND PERIODICALS.

Catalogues and full information direct from:
The United French Publishers,
120, Boulevard Saint-Germain, Paris VI.

FRACTURES.

By MEURICE SINCLAIR, C.M.G., M.B., CH.B. (EDIN.).

With an Introduction by Sir ROBERT JONES, Bt., F.R.C.S. Pp. 550. 337 X-ray photographs, photographs and diagrams. 24s. net.

Constable & Co., Ltd., London.

DISEASES OF THE RECTUM AND COLON

AND THEIR SURGICAL TREATMENT.

BY

J. P. LOCKHART-MUMMERY,

F.R.C.S. ENG., M.A., M.B., B.C. CANTAB.,

Senior Surgeon to St. Mark's Hospital.

Over Two Hundred Plates and Illustrations. Price 25s.

Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

OESOPHAGEAL OBSTRUCTION:

ITS PATHOLOGY, DIAGNOSIS AND TREATMENT

(including four chapters on Cancer of the Œsophagus).

By A. LAWRENCE ABEL, M.S. Lond., F.R.C.S. Eng., Assistant Surgeon to the Cancer Hospital, &c.

Pp. 245. 132 Illustrations. 2 Col. Plates. 30s. net.

"Masterful and complete . . . Cannot be too highly praised." SURG. GYN. AND OBSTET. JOUR.

Oxford University Press, Amen House, London, E.C.4.

DISEASES OF THE THYROID GLAND.

WITH SPECIAL REFERENCE TO THYROTOXICOSIS.

By CECIL A. JOLL, M.S., B.Sc., F.R.C.S. (Eng.).

Crown 4to. Fully Illustrated. £3 3s. net.

"No praise is too high for the author of this great book. It must be considered as the standard work on thyroid disease. Its pages summarise all that is known of this most interesting subject at the present day."—WEST LONDON MEDICAL JOURNAL

William Heinemann (Medical Books) Ltd., 99, Great Russell-street, London, W.C.1.

Just Published. 52nd year. 20s. net.; postage 9d.

With 69 plain and coloured Plates and 192 Text Illustrations.

MEDICAL ANNUAL, 1934.

A YEAR BOOK OF TREATMENT AND PRACTITIONERS' INDEX.

Editors: H. LETHEBY TIDY, M.A., M.D. Oxon., F.R.C.P., and A. RENDLE SHORT, M.D., B.S., B.Sc., F.R.C.S.

With the collaboration of 33 well-known Contributors.

John Wright & Sons Ltd., Publishers, Bristol.

JUST ISSUED.

MAYO CLINIC COLLECTED PAPERS

OF 1933.

See Saunders' Advertisement on Page 3.

NEW (FOURTH) EDITION. Completely rewritten. 10s. 6d. net.

TREATMENT OF DISEASES OF THE SKIN.

By KNOWSLEY SIBLEY, M.A., M.D., B.Ch.(Camb.).

London: Edward Arnold & Co., 41 and 43, Maddox-street, W.1.

Large 8vo. 830 pp. 754 Illustrations, many coloured.

EMERGENCY SURGERY

In Two Volumes. 50s. net; postage 1s.

By HAMILTON BAILEY, F.R.C.S.,

Surg., Royal Northern Hosp.; Cons. Surg., Essex Co. Council.

"An essential for reference in the hands of all who anticipate dealing with emergency work."—PRACTITIONER.

John Wright & Sons Ltd., Publishers, Bristol.

BY W. SAMPSON HANDLEY, M.S. LOND., F.R.C.S., Surgeon to the Middlesex Hospital.

CANCER OF THE BREAST AND ITS TREATMENT.

Second Revised Edition. With 82 Illustrations. 30s. net. (John Murray.)

THE GENESIS OF CANCER: A STUDY OF THE GENETIC RELATIONSHIP OF LYMPH-STASIS AND CANCER.

Just Published. 113 Illustrations. 21s. net.

(Kegan Paul, Anglo-French Library.)

¶ "*This book should certainly make and keep for itself a place in urological literature.*"—LANCET.

UROLOGY IN WOMEN:

A HANDBOOK OF URINARY DISEASES IN THE FEMALE SEX.

By E. CATHERINE LEWIS, M.B. (Lond.), F.R.C.S. (Eng.), Surgeon to the Royal Free Hospital, Surgeon and Urologist to the South London Hospital for Women.

Size 6¼ × 8¼. Pp. viii + 73. With 4 Coloured Plates and 23 other Illustrations. Price 6s.; postage 5d.; abroad 9d.

Baillière, Tindall & Cox, 7 & 8, Henrietta-street, London, W.C.2.

PSYCHOLOGY AND PSYCHOTHERAPY

By WILLIAM BROWN, M.D., D.Sc., F.R.C.P.

New (Third) Edition, rewritten. 6s. net.

A psychologist gives his views on the entire subject, in a book of intense interest both from the therapeutic and the sociological points of view.

London: Edward Arnold & Co., 41 and 43, Maddox-street, W.1.

LEWIS'S BOOKS

Royal 8vo. 10" × 6". Pp. xii + 428. With 48 Illustrations. 40s. net.

STUDIES ON THE PHYSIOLOGY OF THE EYE

STILL REACTION, SLEEP, DREAMS, HIBERNATION, REPRESSION, HYPNOSIS, NARCOSIS, COMA AND ALLIED CONDITIONS.

By J. GRANDSON BYRNE

". . . the book will be valuable. It is profusely illustrated with excellent photographs of the pupils."—BRITISH MEDICAL JOURNAL.

BY THE SAME AUTHOR

With 49 Illustrations. Demy 8vo. 18s. 6d. net; postage 6d.

CLINICAL STUDIES ON THE PHYSIOLOGY OF THE EYE

"This book will interest physiologists, research workers and clinicians in general medicine, neurology and ophthalmology."
—PRACTITIONER.

London: H. K. LEWIS & Co. Ltd., 136, Gower Street, W.C.1

Telegrams: "PUBLICAVIT, EUSROAD, LONDON." *Telephone:* MUSEUM 7756.

Remarkable advance in

LIVER THERAPY

1 injection per month

Concentrating 25 gm. to the c.c.

On injection it is 30 to 100 times as active as 25 gm. by mouth.

Clinically tested before issue on cases of pernicious anæmia in a British hospital after a control period of relapse.

Samples and literature on request.

PERNAEMON
FORTE

ORGANON LABORATORIES

Standardised biological products

1 GORDON SQUARE LONDON - W.C.1

Telephone: Museum 2830 *Telegrams: Manformon, Westcent, London*

1 c.c. has the activity of

1,000/2,500 gm.

FRESH LIVER

per os.

THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, CHEMISTRY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS

No. 5781 LONDON, SATURDAY, JUNE 16, 1934 CCXXVI

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ADDRESSES AND ORIGINAL ARTICLES

Observations on Some Injuries of the Knee-joint. By NAUGHTON DUNN, M.B., Ch.B.—(*Illustrated*) 1267
The Rôle of the Liver in the Metabolism of Carbohydrate and Fat. III.—The Deposition of Liver Fat. By Prof. C. H. BEST, F.R.C.P.... 1274
A New Technique for the Self-administration of Gas-air Analgesia in Labour. By R. J. MINNITT, M.D.—(*Illustrated*) 1278
Vitamin C in the Human Pituitary. By J. GOUGH, M.D. 1279
Hydatid Disease of the Lung. By R. G. PROSSER EVANS, M.R.C.S.—(*Illustrated*). 1281

CLINICAL AND LABORATORY NOTES

Empyema Necessitatis Associated with Paraplegia. By C. ALLAN BIRCH, M.R.C.P..... 1283
A Case of Multiple Aneurysms. By A. G. SANDERS, M.B. 1284

MEDICAL SOCIETIES

Royal Society of Medicine: Sections of Otology and Laryngology: Nerve Anastomosis.... 1285
North of England Obstetrical and Gynæcological Society 1286
Edinburgh Obstetrical Society 1287
International Congress on Rheumatism in Moscow 1288

REVIEWS AND NOTICES OF BOOKS

The Medical Annual. Edited by H. Letheby Tidy, F.R.C.P., and Prof. A. Rendle Short, F.R.C.S. 1289
Modern Treatment in General Practice. Edited by C. P. G. Wakeley, F.R.C.S. 1290
Treatment in General Practice. By Prof. H. Beckman, M.D. 1290
Physics for Medical Students. By J. S. Rogers, M.Sc. Edited by T. H. Laby, F.R.S. 1290
Aids to Sanitary Science and Law. By C. F. White, M.B., D.P.H., and H. Willoughby, M.R.C.S., D.P.H. 1290
The Dermatergoses or Occupational Affections of the Skin. By R. Prosser White, M.D... 1291
The Common Diseases of the Skin. By R. Cranston Low, F.R.C.P. 1291

EUGENICS IN PRACTICE

VI.—Technique of Sterilisation 1291

LEADING ARTICLES

DIPHTHERIA AND THE HUMAN HERD 1293
THE DETERMINATION OF POST-MATURITY 1294
DESENSITISATION FOR HAY-FEVER 1295
UNEMPLOYMENT AND MENTAL DISORDER.... 1296
WALTER FLETCHER 1296

ANNOTATIONS

Treloar Hospital Completed 1297
Specific Therapy Against Type III. Pneumococcus 1297
Bacteriological Analysis of Water 1297
Nervous Complications of Mumps 1298
Coördination of Medical Research in East Africa 1298
Absorption of Fluid from the Pleural Cavities.... 1299
The Dangers of Carbon Bisulphide 1299
Evipan and Asthma 1300
Conference on Vitamin Standardisation 1300
Adrenal Denervation.... 1300

PROGNOSIS

VI.—Prognosis in Juvenile Rheumatism. By REGINALD MILLER, F.R.C.P. 1301

PREVENTIVE ASPECTS OF MEDICINE

XXV.—Public Agencies which Exist for the Prevention of Disease. By W. ALLEN DALEY, M.R.C.P.—(*Concluded*). 1302

SPECIAL ARTICLES

General Medical Council: The Pharmacopœia.—Medical Education and Examination.—Penal Cases.—(*Concluded*) ... 1306
Lister Institute of Preventive Medicine.—(*To be concluded*)..... 1309
Medicine and the Law: Jurisdiction of the G.M.C. 1310
Voluntary Hospitals Conference 1311
Ireland: The Hospitals Sweepstakes and Medical Research 1311
Scotland: Water Shortage 1312

PUBLIC HEALTH

The L.C.C. Consultant Service.—Recommendations under the Mental Treatment Act..... 1313
Infectious Disease in England and Wales.. 1312

PANEL AND CONTRACT PRACTICE

Benefits for Married Women.—On Buying a Practice.—Arch Supports Again.—Health Insurance in America 1313

THE SERVICES

Royal Naval Medical Service.—Royal Army Medical Corps.—Indian Medical Service.—Royal Air Force 1305

OBITUARY

Dr. Georg Walther Groddeck 1318
William Simms, L.D.S., M.Sc. 1318

CORRESPONDENCE

The late Sir Walter Fletcher (Mr. Stanley Baldwin and others).. 1314
Furuncle of the Auditory Meatus (Dr. W. H. Vakeel)..... 1315
Peptic Ulcer (Dr. Arthur F. Hurst) 1315
The Health of Nurses in Training (Dr. Dorothy C. Hare) 1315
A Grave Protest (Dr. James Taylor) 1315
Anaerobic Culture of Fæces (Dr. C. B. Dyson) 1316

PARLIAMENT

Notes on Current Topics: Arc-Lamp Carbon Duty.—Children and the Unemployment Bill.—Milk-supply and Public Health.—Road Accidents 1316
House of Commons: Water Shortage in England.—Blood Tests for Inebriates.—State Inspection of Private Schools 1317

MEDICAL NEWS

University of Cambridge 1319
University of London.... 1319
University of Sheffield.. 1319
University of Wales 1319
Scottish Board of Control 1319
Anti-Noise League 1319
Cancer Hospital (Free), London 1319
British Social Hygiene Council 1319

NOTES, COMMENTS, AND ABSTRACTS

Fracture of the Neck of the Femur 1321
National Baby Week Council 1321
Meningitis due to Gärtner's Bacillus 1321
Post-graduate Opportunities in Hungary .. 1322
Rose De Mai..... 1322
Lines from a G.P..... 1322
School of Dietetics 1322

Appointments 1320
Vacancies 1320
Births, Marriages, Deaths 1320
Medical Diary 1322

JOHN BALE, SONS & DANIELSSON, LTD.

SURGICAL TREATMENT OF PULMONARY AND Pleural Tuberculosis.
By J. GRAVESEN, M.D. (Copenhagen), Med. Superint., Vejlefjord Sanatorium, Denmark. With a Foreword by S. VERE PEARSON, M.D., M.R.C.P. 87 Illustrations (3 in colour). Post free 11s. 3d.,
"Dr. Gravesen's book fills a gap . . . will remain a standard work on this subject for years to come."—LANCET.

DISEASES OF THE NEWBORN.
By Dr. AUGUST RITTER VON REUSS. Translation revised by JOHN D. ROLLESTON, M.D., B.Ch., M.A., Editor of the "British Journal of Children's Diseases." Illustrated. Post free 53s. 9d.
"Of great importance . . . deals more thoroughly with the subject of the newborn than any we can call to mind."—LANCET.

DIPHTHERIA, PAST AND PRESENT. Its Ætiology, Distribution, Transmission and Prevention. By J. GRAHAM FORBES, M.D., F.R.C.P., D.P.H. Introductory Note by Sir FREDERICK ANDREWES, M.D., F.R.S. Post free 46s. net.
"It should be in the hands of every Medical Officer of Health."
—PUBLIC HEALTH.

WILHELM CONRAD RÖNTGEN and the Early History of the X-Rays. By OTTO GLASSER. Illustrated. Post free: inland 33s. 3d., abroad 34s.
"This volume has interest for every worker, whether on the medical or physical side of radiology."—LANCET.

A MANUAL OF PRACTICAL CHEMISTRY. For Public Health Students. Specially arranged for those studying for the D.P.H. By ALAN W. STEWART, D.Sc., A.I.C., Demonstrator of Chemistry at the Royal Institute of Public Health, London. Second Edition. Interleaved with plain paper for notes. Numerous Illustrations. Post free 5s. 6d.
"For the purpose for which the book is intended it is admirable."—MEDICAL OFFICER. "Excellent."—JOUR. OF STATE MEDICINE.

SYNOPTIC CHART OF CARDIAC EXAMINATION. Arranged by JOHN D. COMRIE, M.A., M.D., Ch.B., B.Sc., F.R.C.P.E., Lecturer on History of Medicine and Clinical Medicine, University of Edinburgh, and Assistant Physician, Royal Infirmary, Edinburgh. Second Edition, revised and enlarged. Post free 5s.
"The idea is very completely worked out."—BRITISH MEDICAL JOUR.

83-91, GREAT TITCHFIELD ST., LONDON, W.1

OXFORD MEDICAL PUBLICATIONS

ESSENTIALS OF INFANT FEEDING AND PAEDIATRIC PRACTICE

By HENRY P. WRIGHT, B.A., M.D.

Pp. 222. With Charts and Tables. **12s. 6d.** net.

NEPHRITIS AND ALLIED DISEASES

Their Pathogeny and Treatment

By ROBERT PLATT, M.D., M.R.C.P.

Pp. 176. 8 Illustrations. **7s. 6d.** net.

X-RAY AND RADIUM INJURIES

Prevention and Treatment

By HECTOR A. COLWELL, M.B., Ph.D., M.R.C.P., D.P.H., and SIDNEY RUSS, C.B.E., D.Sc., F. Inst. P.

"It is impossible to deal with all the important material so admirably marshalled in this monograph, but we feel confident that it will long remain a source of reference on the injuries due to irradiation, which, with adoption of the means of protection here advocated, should in the future have mainly an historical interest."—BRITISH MEDICAL JOURNAL.

Pp. 222. 2 Illustrations. **14s.** net.

THE ANAEMIAS

By JANET M. VAUGHAN, D.M. Oxon., M.R.C.P. Lond.

WITH NOTES ON NORMAL AND PATHOLOGICAL ERYTHROPOIESIS

By HUBERT M. TURNBULL, D.M. Oxon., F.R.C.P. Lond.

"Dr. Vaughan has succeeded admirably in giving a clear picture of modern conceptions of anaemia, and the book, moreover, contains the outcome of much previously unpublished research . . . this monograph will prove invaluable . . . it should also provide a stimulus to research."
—THE LANCET.

Pp. 260. 24 Illustrations. **12s. 6d.** net.

TEXT-BOOK OF THE PRACTICE OF MEDICINE

By Various Authors

Edited by FREDERICK W. PRICE, M.D., F.R.S. Edin.

"Dr. Price and his distinguished contributors may be assured that this edition is likely further to enhance the well-deserved reputation of their work."—THE LANCET.

4th Edition. Pp. 2040. 106 Illustrations. **36s.** net.

APPLIED PHYSIOLOGY

By SAMSON WRIGHT, M.D., F.R.C.P.

"If ever there was a book on physiology worth buying and worth keeping, this is it."—MIDDLESEX HOSPITAL JOURNAL.

5th Edition. Pp. 636 195 Illustrations. **18s.** net.

Oxford University Press

HUMPHREY MILFORD AMEN HOUSE LONDON, E.C.4

ADDRESSES AND ORIGINAL ARTICLES

OBSERVATIONS ON SOME INJURIES OF THE KNEE-JOINT*

BY NAUGHTON DUNN, M.B., Ch.B. Aberd.

LECTURER ON ORTHOPÆDIC SURGERY, THE UNIVERSITY OF BIRMINGHAM

THE majority of injuries of the knee as of other joints make a natural and complete recovery without special treatment. Severe strain of the knee is, however, common, because this joint has to sustain body-weight transmitted to it through long levers, and whilst doing so allows a wide range of movement.

The knee-joint consists essentially of the broadened ends of the tibia and femur with a sesamoid bone—the patella—in the extensor apparatus, and two fibrocartilaginous discs interposed between the femur and tibia. Nature has provided it with powerful muscles for its control and strong ligaments on which it largely depends for its stability. Although the muscles form the first line of defence against injury, there seems reason to suppose that severe lesions of the knee may be classified into two main groups: those due to direct injury when the muscles are not on guard or their contractile power has been overcome, and those associated with the effort of the muscles to avert injury. The former includes rupture of ligaments, dislocations, and stellate fracture of the patella—the latter, other lesions of the extensor apparatus, and I think also most lesions of the intra-articular fibrocartilages.

In a previous publication,[1] in reviewing a series of 522 consecutive cases of recurrent or chronic disturbance of the normal mechanism of the knee-joint as a result of injury, I found that 250, or almost one half, were diagnosed as due to a lesion of one or other of the intra-articular fibrocartilages. In 179 the internal, and in 71 the external cartilage appeared to be the site of the lesion. Exploration of the joint was carried out in 185 of these cases, and a careful study of the findings at the time of operation revealed two facts which were at variance with the published findings of other observers. These were: (1) the relative frequency of lesions of the external cartilage; (2) the high proportion of the lesions found to be present in the posterior segment of the cartilage.

Relative Frequency of the Site of Lesions

As regards the relative frequency of lesions of the cartilages it has always been agreed that the internal cartilage is more liable to injury than the external. Jones,[2] Martin,[3] Campbell,[4] Henderson,[5] Fisher,[6] MacAusland,[7] Surls and Osgood,[8] and others, in their published writings, find that lesions of the internal are from 15 to 4 times more common than those of the external cartilage. My own statistics showed that the internal cartilage was removed in 139, and the external cartilage in 46 cases. Of these 185 cases, however, a definite lesion of the cartilage was found in only 157: 118 internal, 39 external. The remainder were classified in the notes as "N.D.L."—i.e., no demonstrable lesion. These figures show that, in the cases in which a definite lesion was demonstrated at the time of operating, the relative frequency of injury of the internal cartilage to that of the external was 3 to 1. As this aroused criticism at the time, I have reviewed a further series of 110 consecutive cases operated on for a suspected cartilage injury. A definite lesion was found to be present in 98 of these, the internal semilunar cartilage being involved in 66 and the external in 32. This gives an approximate ratio of 2 to 1. If we combine the two groups of statistics we find:

Total number of cases operated on .. 295
Definite lesions found in 255 .. .. 86·44%

Of 255 cases with definite lesions:

Internal cartilage was affected in 184 (72·10%).
External ,, ,, ,, 71 (27·84%).

This gives a ratio of 2·6 to 1. What is the explanation of this variance from the findings of other observers? I would suggest that it is more apparent than real, and that where it is real it is due to the difficulty of accurate diagnosis in many lesions of the knee-joint. I am in almost entire agreement with Martin when he writes:

"I would here wish to emphasise that where a proper diagnosis has been made, the injury is always in the nature of a tear or split, and when such is not found the probability is that a wrong diagnosis has been made, some other structure having been injured."

Surgical text-books usually confine themselves to a description of commonly recognised lesions in relation to particular joints. The patient complains of pain and/or limitation of movement in conditions such as tennis elbow, tenosynovitis, the presence of a palpable ganglion, &c. These conditions are readily diagnosed when they occur in situations where the structures involved are accessible to direct palpation. This, however, is not possible in the case of many of the ligaments, bursæ, &c., apt to be affected by strain of the knee-joint. It is to be noted that in my statistics I have confined myself to lesions which could be demonstrated at the time of operation. Martin failed to demonstrate a lesion in 4·5 per cent. of the cases operated on, and Sir Robert Jones considered definite lesions present in but 117 of 190 cases. In this series I failed to establish a diagnosis in 13·56 per cent. of the cases on which I operated. I have not included cases of hypermobility of the cartilage, as although some undue mobility of the cartilage may have been present, I have felt that this might be a variable factor, so that my experience did not justify me in classifying them as definite lesions.

The second point which interested me was that the very large percentage of the lesions were confined to the posterior half of the cartilage, and that involvement of the anterior half was, when present, usually secondary to this.

Internal cartilage cases.—Total operated upon, 214. Lesions found.

(*a*) Fracture or detachment in anterior half 35 (16·35%).
(*b*) ,, ,, ,, posterior ,, 89 (41·59%).
(*c*) Bucket handle type .. .. .. 60 (28·04%).
(*d*) No demonstrable lesion .. .. 30 (14·02%).

External cartilage cases.—Total operated upon, 81. Lesions found.

(*a*) Fracture or detachment in anterior half 19 (23·46%).
(*b*) ,, ,, ,, posterior ,, 40 (49·38%).
(*c*) Bucket handle type .. .. .. 8 (10·00%).
(*d*) No demonstrable lesion .. .. 10 (12·35%).

Of the 255 definite lesions demonstrated there were:

54 fractures or detachments of anterior half = 21·18%.
129 ,, ,, ,, posterior ,, = 50·59%.
68 Bucket handle type .. .. .. = 26·67%.

These tables show in statistical form the site of the lesion found to be present on removal of 214 internal

* An address delivered before the American Academy of Orthopædic Surgeons, Chicago, on Jan. 9th.

and 81 external cartilages, and also the percentage in which no lesion of the cartilage could be demonstrated. Of the 255 cases in which a definite lesion was seen 50·59 per cent. were lesions of the posterior half of the cartilage, and 26·67 per cent. an extension of this into the anterior segment, which when complete showed the intercondylar displacement of a section of the cartilage, the anterior and posterior attachments being intact. Fracture or detachment of the anterior half occurred in only 21·18 per cent. of the cases.

It is to be noted in reviewing my cases that not only is the internal more often damaged than the external cartilage, but the inner side of the knee is also more frequently the site of pain and tenderness as a result of strain of other structures. For an explanation of this we depend on a knowledge of the anatomy and physiology of the joint, and an appreciation of the relation of the parts during its complex movements.

Lesions of the Intra-articular Cartilages

Not infrequently a patient will open his consultation with the statement that he has "slipped a cartilage" whereas close investigation reveals no such possibility. It is, however, on a correct diagnosis of the condition of the intra-articular cartilages that successful treatment will frequently depend. A lesion of an intra-articular cartilage may be confidently diagnosed if there is a history of recurrent locking of the joint with pain and tenderness limited to the attachments of one of the cartilages, the joint being normal in function in the intervals between the acute attacks, and no X ray evidence of any abnormality is present. On exploration of the joint, one may find a lesion of the anterior half or a bucket-handle displacement—in which case I believe that it is sufficient to remove the obviously detached portion. If no abnormality is seen, the condition of the posterior portion of the cartilage can only be known by its removal. A lesion of the posterior half is proved if, with peripheral detachment of the anterior half, and slight traction, the main body of the cartilage becomes displaced into the centre of the joint. This would not occur with a normal cartilage. This in my experience is the most common lesion. It would appear to arise as a result of abnormal strain of the flexed knee. This causes a disturbance of the normal relations of the parts, and with the protective action of the muscles coming into play, the posterior segment of the cartilage is nipped, torn, or separated from its peripheral attachment.

Not infrequently a longitudinal tear rather than a separation of the true attachment occurs. This means that, after the operation described, a portion of the periphery of the posterior segment of the cartilage is still present, and its attachments may have been loosened as a result of the original injury. As a rule the joint gives no further trouble, and I am inclined to be satisfied when I have dealt with the main lesion. I have, however, notes of several cases in which a recurrence of symptoms necessitated the removal of this portion. I have also notes of cases in which we had a typical history of recurrent displacement of the internal cartilage, and on exploring the joint no lesion of this structure was found. In these cases, if I am perfectly satisfied with my diagnosis, I always explore the outer side of the joint, as on several occasions the patient has very definitely referred all his symptoms to the inner side of the knee when the external cartilage was the site of the lesion.

Another condition which may complicate the question is the fact that both cartilages may have been torn. We know in taking our history that the patient is often indefinite about the side of the joint to which pain was referred at the time of injury, and with recurrent displacements it may also vary. In these cases I always make the diagnosis on the site of tenderness after a recent injury. If the case is seen some time after injury, and no local tenderness is present, I will not operate, but request that the knee be tested and the patient referred for further examination as soon as possible after the next injury. If after a recent injury I find tenderness limited to the line of the inner or outer side of the joint, I advise operation accordingly. That this is not always a safe procedure is illustrated by the following case: A footballer was referred to me with the diagnosis of recurrent displacement of the external cartilage. At the time of my examination tenderness pointed definitely to a lesion on the inner side of the joint, and at operation I found a typical bucket-handle displacement of the internal cartilage, and after its removal closed the joint. It was reported to me that the knee had given way and again locked when the patient was getting out of bed prior to discharge 14 days later. Pain and tenderness were now referred to the outer side of the joint, and exploration revealed a similar lesion of this cartilage. Since operation the knee has resumed and retained normal function. Many of the cases are professional association football players—a game which necessitates abnormal strain of the knee-joint, and my experience is that where the lesion is confined to the cartilages the removal of one or both does not interfere in any way with their athletic activities.

FIG. 1.—Incision advised to obviate complications following division of the patellar branch of the internal saphenous nerve.

To ensure a perfect result I attach considerable importance to the incision used for the removal of the internal meniscus. Care must be taken to avoid division of the patellar branch of the internal saphenous nerve. My attention was first drawn to the importance of this in 1916, when I removed what appeared to be a tender scar which had followed removal of an internal cartilage. The patient returned to France, but reported three months later that he was unable to ride because of pain referred to the femoral condyle on gripping the saddle. Examination revealed a tender nodule at this site which on removal proved to be a neuroma on the patellar nerve branch of the internal saphenous nerve. Since this I have on 12 occasions removed a neuroma of this nerve because of pain following a previous operation for exploration of the inner side of the joint. When this sequela occurs the nerve should be dissected free and avulsed rather than divided, so as to prevent recurrence of symptoms. The essential feature of the incision which I use for removal of the internal cartilage is that it runs parallel with this nerve and allows of its retraction before the capsule is incised. This has the advantages that we cannot get a painful neuroma in the scar or the anæsthesia commonly complained of in the area of distribution of the patellar branch of the internal saphenous nerve. Both are points of great importance in the case of professional foot-

ballers, as unless the knee feels absolutely normal confidence in it is unduly delayed (Figs. 1 and 2).

FIG. 2.—Showing avulsion of neuroma of patellar branch of internal saphenous nerve.

Congenital Abnormalities of the External Cartilage

Before leaving the subject of injuries to the intra-articular cartilages, I wish to refer to congenital abnormalities in the form or attachments of the external cartilage. These are not so very uncommon. Included in this series of 81 cases of external cartilage lesions operated upon are 8 cases—i.e., ten per cent.—in which the history and operative findings suggested a congenital abnormality. The history is usually one of trouble with the knee in early childhood. Not uncommonly this takes the form of an audible snap or "clonk," which appears to be associated with the outer side of the joint on extension. There is seldom much effusion. The condition gives the child little trouble, and at this time the question of operation is frequently delayed. In other cases no symptoms become evident until the child takes part in active games, when apparently without due cause symptoms suggestive of cartilage displacement may arise. The condition is not infrequently bilateral. The following histories are typical, and include the two types of abnormality which I have found present.

FIG. 3.—Specimen showing congenital abnormality of external semilunar cartilage. The longitudinal split in the posterior half is the result of a recent injury.

CASE 1.—History. Mr. R. was aged 43 when first seen in February, 1931. Left knee: When 9 years old the knee commenced to give way frequently, and a very temporary painless locking occurred. As a result of this he was unable to take part in games. The trouble persisted, and at the age of 19 years locking became more frequent, and was accompanied by pain at the back or outer side of the joint. The last occasion was three weeks previous to examination, when locking persisted for two days. Right knee: The first trouble occurred eight years prior to examination—i.e., when aged 35 years. When turning over in bed with the knee relaxed he felt a sudden pain on the outer side of the joint, and could not straighten it. This happened four times in that year, and was relieved on each occasion after manipulation of the joint under an anæsthetic. The knee had locked on only one occasion since then, but he had worn a bandage constantly and exercised great care in movement.

Clinical examination: Both joints had perfectly free movements, but some pain was referred to their outer sides on forcing flexion and internal rotation. There was no local tenderness apart from slight tenderness over the attachments of the posterior third of the outer cartilage of the left knee. The X rays revealed no abnormality. Operation: The condition found at operation was: on the left side the external cartilage consisted of two fusiform fibrocartilaginous bodies representing the anterior and posterior segments of the cartilage. These were united in the middle by fibrous tissue. They appeared to have no peripheral attachment, but the cornua had slender fibrous attachments to the neighbourhood of the spine of the tibia. The external cartilage of the right knee had a similar form, but the posterior segment had been displaced in front of the condyle of the femur. As a result of the removal of these structures this man, at the age of 44, was enabled to take part in ordinary games for the first time without trouble.

CASE 2.—This case illustrates the second type of abnormality. I have found it present in three cases, in one of which it was bilateral. The case, from which I show the specimen removed, was operated on in my service by Mr. A. M. Hendry on Dec. 8th, 1933 (Fig. 3). The patient, a woman aged 31, was first seen on Nov. 23rd, 1933.

History: Her history was that as a child she had some indefinite trouble with the right knee. Six years ago she had a direct injury to the knee, and since this had occasionally had pain referred to the back and outer sides of the joint on twisting it, accompanied by temporary difficulty in obtaining full extension. Nine months ago she commenced to get aching pain in the knee and has been unable to straighten it fully since. On examination all movements were free, except extension which was limited by 30 degrees. Definite tenderness limited to the line of the external cartilage was present. X ray did not show any abnormality of the joint. Operation: At operation on opening the outer side of the joint it was at once noted that the cartilage was abnormal. It consisted of a complete flat disc about one-fifth of an inch thick, extending from the periphery to the centre of the joint. On dividing the peripheral attachment of the anterior third, the complete disc was readily displaced in front of the condyle. The appearance of the peripheral portion

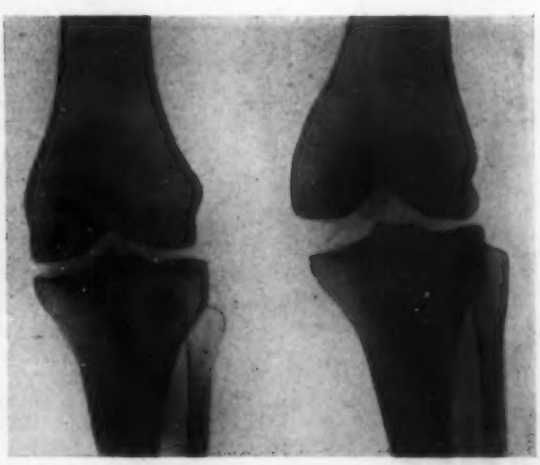


FIG. 4.—Radiogram showing laxity of knee-joint due to rupture of internal lateral ligament.

of the posterior two-thirds suggested that its attachments had been previously ruptured. Division of the attachment in the neighbourhood of the spine of the tibia allowed removal of the complete disc. It is to be noted that although the articular surface of the femur was separated from direct contact with that of the tibia, the radiograms showed no abnormal widening of the joint space.

I have removed an external cartilage from the knee of a child of 4 because of the anxiety of the mother, and from experience of cases in later life I would suggest that operation is advisable in young children if symptoms suggestive of a congenital abnormality of this cartilage are present. The presence of these abnormalities suggests that the condition of cystic degeneration of the external cartilage may also be congenital in origin.

Although inability to extend the knee completely is not uncommonly noted after disturbance of the normal relations of an intra-articular cartilage, we find that it is also one of the most common sequelæ of any severe injury of the knee-joint. Where this is not caused by a definite intra-articular obstruction, the position of slight flexion is due to the instinctive effort of the patient to avoid pain in many conditions which may simulate a lesion of an intra-articular cartilage. Again we find the inner side of the knee more frequently the site of pain than the outer. This side of the joint would appear to be more liable to strain because of the normal inclination inwards of the femur on the tibia, the greater range of movement of the inner condyle of the femur, and the fact that the outer side of the joint is more exposed to the application of external forces.

Lesions of the Lateral Ligaments

Strain of the internal lateral ligament is in my experience five times as common as that of the external lateral ligament, but it is more rarely

A B

FIG. 6.—Radiograms showing loose body impacted in intercondylar notch; (A) front view, (B) lateral view. Removal necessary to allow extension of joint. (Author's case.)

completely ruptured. The symptoms may closely resemble those of a cartilage lesion. There is severe pain referred to the inner side of the joint—a feeling of something tearing, and pain on attempting to straighten the knee fully. This limitation of extension differs from the locking due to a cartilage displacement in that it disappears under anæsthesia, and would seem to be associated with the fact that the ligament being taut in extension, the position of relaxation is instinctively adopted to obviate strain of its attachments. In reviewing 34 consecutive cases of severe

FIG. 5.—Radiogram showing laxity of knee-joint due to rupture of external lateral ligament.

strain of this ligament, none was associated with a lesion of the cartilage requiring operative treatment, except one in which the anterior crucial ligament was also ruptured. Strain of the internal lateral ligament is accompanied by tenderness in the line of the internal cartilage (Fig. 4), but the maximum tenderness is usually over one or other of the attachments of the ligament, most frequently the femoral. The treatment consists of pressure over this point, slight elevation of the heel of the boot to maintain relaxation, elevation of the sole and heel of the boot on the inner side to divert body-weight to the outer side of the joint, with electrical treatment to restore the tone and volume of the vastus internus muscle. Treatment on these lines must be continued until local tenderness has entirely gone, and no pain is elicited on forcing any movement. If the joint is subjected to strain before its normal control and movement have been established, recurrence of the same strain of symptoms is to be expected, and suspicion of cartilage injury again aroused. Lesions of the external lateral ligament are less common than those of the internal lateral ligament. In my experience it is most frequently completely ruptured, when surgical treatment is necessary to restore stability of the joint.

Following a severe strain traumatic exostosis or ossification in the ligaments may occur as a result of new bone formation at the site of rupture. This will as a rule be demonstrated by radiograms. If the stability of the joint is good as a result of conservative treatment, they should be dealt with surgically only if they give rise to trouble. Cases of recurrent disability

following strain of a lateral ligament may, however, occur in which the X ray reveals no injury to the bone—so that if tenderness definitely localised to the attachment of the ligament persists after appropriate conservative treatment, the question of exploration of the tender area should be considered. A lady, the wife of a doctor, and aged 28, stated that since severely twisting the knee three years previously she had been unable to take part in sports because of a severe pain referred to the inner side of the knee if it was subjected to strain. Examination revealed a definitely tender point over the inner condyle of the femur, and pain was referred to this point on forced abduction and external rotation. The X ray was negative. On exploring the tender area I found a tiny sharp spicule of bone with a bursa around it. Since removal of this spicule of bone she has had no recurrence of trouble in the knee.

Perhaps the next most common condition to simulate lesions of the semilunar cartilages is the presence of loose bodies in the joint. They may be due to a number of causes, including traumatic separation of a portion of the articular cartilage—separation of osteophytes, or osteochondritis of the internal condyle. The X rays will usually establish the diagnosis. The symptoms usually differ from the cartilage displacement in that the locking is very temporary, the body being nipped and immediately displaced from the position in which it obstructs movement, and the site of pain is variable. The history will also reveal that the knee has not always felt just as good as the other prior to the commencement of definite symptoms. Some limitation of extension of gradual onset may occur as a result of an accumulation of loose bodies in the posterior aspect of the joint, but where a sudden and persistent limitation of extension occurs it has in my experience always been due to a moderately large body becoming wedged in front of the attachments of the crucial ligaments. When it is in this position manipulation will fail to dislodge it, and operation is necessary for its removal. I show you the X rays of the last case on which I operated for this type of locking (Fig. 6, *a* and *b*). It is interesting in that it illustrates changes in the joint following a fracture of the patella 18 years ago. Lieutenant H. was shot down when flying in October, 1915. Seven months later he presented himself at Shepherd's Bush Hospital with a comminuted fracture of the upper part of the patella, with 2½ in. separation of the main fragments, so that voluntary extension of the leg was not possible. At operation the smaller fragments were removed, and continuity of the main fragments secured by wire suture. The wound broke down, the wire was removed, and he left hospital some months later wearing a knee cage, and gradually developing an increasing range of movement. I saw him again in October, 1933, when he told me that although he had never been able to flex the knee fully, he had played golf and tennis regularly without trouble until June of that year, when he began to feel something catching in the joint, which apart from slight effusion and annoyance caused little disability. Fourteen days prior to my examination he reported that when going down stairs the knee jammed, and he had been unable to straighten it since. On examination one could feel lipping of the articular margins, and the movement of extension was blocked 30 degrees short of this position. The X ray revealed a loose body in the intercondylar notch, and also numerous marginal osteophytes, particularly round the patella. The body was exposed, and as a matter of interest it was noted that it could not be displaced by manipulation. Since its removal the joint has recovered its pre-operative range of movement.

Lesions of the Extensor Apparatus

Lesions of the extensor apparatus of the knee-joint may be diagnosed when although the patient is unable fully to extend the knee voluntarily, painless passive extension is possible. On palpation the point of tenderness will indicate the site of the lesion. The following lesions may occur: separation of the tibial tubercle, detachment of the ligament from the lower border of the patella, transverse fracture of the patella, or separation of the quadriceps tendon from the upper border of the patella. The site of lesion will depend on the relation of the patella to the condyles of the femur when the protective action of the quadriceps comes into play. As a result of the strong contraction of this muscle, considerable separation of the fragments may occur at the site of rupture, so that surgical treatment is usually necessary. These observations as to the site of lesion are based partly on experience of mobilisation of knee-joints in war surgery, but also on the fact that three consecutive cases of rupture of the quadriceps attachment to the patella occurred in gentlemen late in the evening, at a time when their cerebral control of muscle action might have been somewhat delayed. Perhaps earlier in the evening the protective action of the quadriceps might have been more prompt, and no lesion or perhaps fracture of the patella would occur. The contractile power of the quadriceps presents the real difficulty in maintaining apposition of the structures at and after operation. In cases of fracture of the patella wire sutures are not infrequently used, and we are apt to depend on suture by heavy chromised catgut or kangaroo tendon to maintain attachment of a ruptured quadriceps tendon to the upper border of the patella.

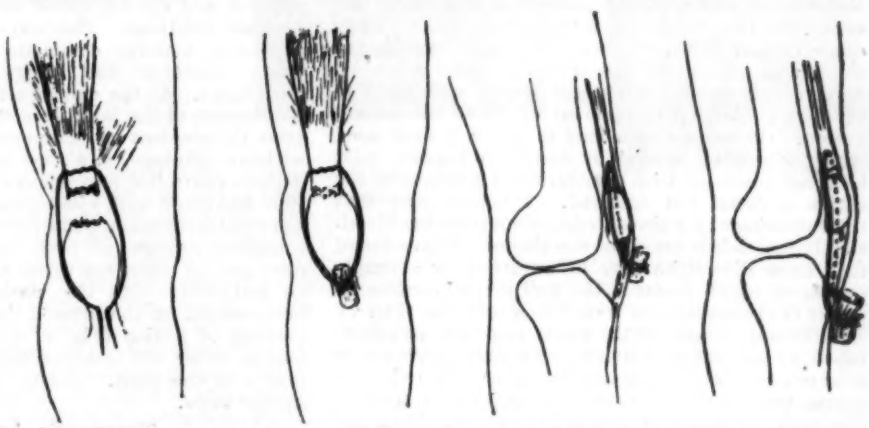


FIG. 7.—Diagram showing tension suture used in repair of rupture of the extensor apparatus.

In my experience these methods have been open to grave objections. We know that nature resents the presence of foreign, unabsorbable materials in the tissues, whether these are vaselin, metal screws, plates, or wires, and that sooner or later a local inflammation results, necessitating their removal. I will refer to one case which clearly demonstrates this. Just before our military hospital in Birmingham was closed a pensioner reported for treatment because of a discharging sinus in front of the patella. His record card showed that he had sustained a simple fracture of the patella, which had been treated by operation ten years previously. For nine years he had worked regularly, and the knee gave no trouble. Then local inflammation occurred, the operation scar broke down, and a sinus persisted. A radiograph was taken, but this did not show the presence of a wire or other foreign body. It was decided to excise the sinus, and during the operation we found a plaited band of silkworm gut sutures partly embedded in the bone. With the removal of these the wound healed. On several occasions in which I have used strong chromised catgut or kangaroo tendon, mild local inflammation with evacuation of portions of the suture material has occurred. I believe also that tight suturing at the site of lesion diminishes the blood-supply and delays repair of the tissues. I have found that these difficulties may be obviated by a simple expedient which removes the pull of the contractile power of the quadriceps from the suture line (Fig. 7). The accurate repair of the lesion can then be established by fine catgut sutures. The method we adopt is to pass a pliable phosphor-bronze wire in a sinuous course transversely through the quadriceps tendon. The ends, on separate needles, are passed down the lateral borders of the patella and emerge through the skin in close proximity either below the patella or at the level of the tibial tubercle. In most cases it is sufficient to tie this wire suture over a pad of gauze at the level of the lower border of the patella. Occasionally, when much tension is necessary, it is advisable to pass the wires in opposite directions through a hole drilled in the tubercle of the tibia, when they are drawn tight and tied over a pad of gauze which protects the skin from pressure. At the end of two to three weeks the wire is divided and easily withdrawn.

FIG. 8.—Case of complete dislocation of the knee treated by conservative means. Radiogram showing the injury.

Rupture of the Crucial Ligaments

Complete dislocation—One of the most severe disabilities following injury of the knee-joint is loss of antero-posterior stability of the joint following rupture of one or both of the crucial ligaments. These cases are usually associated with injury to the internal lateral ligament and one or both cartilages. The operation advised by Alwyn Smith and Hey Groves offers an ingenuous method of replacing these ligaments by fascial and tendon transplantation. My experience of the operation has been that stability of the joint was definitely increased, and that for several months it appeared to be almost a perfect success, but later examination always showed the presence of a degree of antero-posterior movement which did not justify the removal of splintage. I have always had the feeling that the removal of a troublesome meniscus was not an unimportant factor in the patient's satisfaction with the result obtained.

Apart from dealing with lesions of the cartilages or lateral ligaments if present, my practice is to treat lesions of the crucial ligaments on conservative lines. Where a fracture of the tibial spine blocks extension, this can usually be overcome by gradual splintage or manipulation, and although theoretically full extension may not be the ideal position for the treatment of these lesions, in practice it has given excellent results. In orthopædic surgery more than any other branch of the art, a knowledge of what nature can do is necessary to temper our judgment, and to assess the proper value of our procedures. This is well illustrated by a case of complete dislocation of the knee which came under my care last year (Fig. 8). I first saw him six weeks after his injury. The history of the case is: A workman, E. B., aged 40 years, sustained a complete dislocation of the knee, the femur being displaced backward on the tibia as a result of a heavy pipe falling on its lower end. Under general anæsthesia the dislocation was reduced, a pressure bandage applied, and the leg rested on a pillow, and steadied between sandbags. Five days later the effusion was aspirated, massage commenced, together with electrical treatment, and contractile exercises for the quadriceps. At the end of a fortnight limited active movements of the joint were encouraged. Four weeks after the accident he commenced to walk with a stick without splintage, and two weeks later he had 90 degrees controlled movement of the joint from extension, and could walk without limp or pain. The X rays show the dislocation, an injury which must have caused complete rupture of both crucial ligaments. The photographs taken ten weeks after the accident show no instability with the patient bearing his whole body-weight on the injured limb, with the knee in a position of flexion (Fig. 9, *a*, *b*, and *c*). To-day, 18 months after the accident, there is no clinical abnormality of the joint. Joseph Mitchell [9] has reported similar cases.

Traumatic Arthritis

We have dealt so far with injuries in which a definite pathological lesion can usually be demonstrated, but in reviewing a series of cases of injury of the knee-joint we all find a large number in which disability persists, although no definite lesion of the joint structures has occurred. This will include many in which movement remains limited as a result of a traumatic and/or toxic arthritis following the injury. We recognise that direct or indirect trauma of the shoulder-joint is not infrequently followed by a painful limitation of movement of the joint. This is more common in patients past middle life, and they usually have a toxic diathesis. Probably the main fact that saves them from operative treatment is that the X ray is negative, and that there are no intra-articular fibrocartilages in the shoulder-joint. In the case of the knee-joint, however, the possibility of a

cartilage lesion makes the diagnosis more difficult, and I know I have many times in my earlier days removed normal cartilages as a result of faulty diagnosis. Fortunately the operation is helpful in that the convalescence ensures rest of the joint, which is one of the essential lines of treatment of the condition. The fact that after operation the patient usually still complains of pain in the joint on full extension, and does not make the usual quick recovery of movement, also draws our attention to the importance of investigation of a possible septic focus. With appropriate treatment of this, and the local joint condition, a complete recovery of function usually occurs. When you are dealing with a primary lesion of the knee-joint the history of injury may be such as to make cartilage displacement possible, and the persistent limitation of and pain on forcing full extension of the joint make this seem most probable. I have seen it in a girl of 26 in which the doctor reported to me he had reduced a dislocation of the knee six weeks previously, but extension was still limited. I manipulated the joint, but the pain of treatment in full extension necessitated removal of

A

B

C

FIG. 9—Same case. Photographs showing the patient's control of the joint ten weeks after injury: (A) extension; (B) flexion: (C) body-weight supported by injured limb.

splintage, and operation for removal of the internal cartilage was advised. At operation the pink injected margin of the articular cartilage was noted, and removal of a normal internal semilunar cartilage did not allow painless extension of the joint. The possibility of this condition must always be borne in mind in dealing with limitation of extension following a primary injury of the knee-joint. Tenderness may appear to be more marked on the line of the internal cartilage, but if the articular margins of the condyles of the femur are also tender, and pain is present both on forcing flexion and extension our prognosis should be guarded. Operation should be advised only in cases in which the nature and severity of the injury suggest the probability of the complication of cartilage displacement. Manipulation during the period of inflammation is useless, but when pain and all local tenderness have gone, it may be utilised to establish a full range of movement.

Manipulative Surgery

The knee is perhaps second only to the spine as a field for the activities of the manipulative surgeon, but it is amazing to me how seldom we who deal constantly with joint injuries have occasion to employ it. It should always be utilised to ensure full extension of the knee when displacement of a cartilage is the probable cause of limitation of this movement, except in cases of recurrent displacement, when the diagnosis is clear. In these cases the patient should be advised to have the cartilage removed by operation, which is the only means of preventing recurrence of the trouble. I find that at least 90 per cent. of the professional footballers on whom I have operated have previously had their joints manipulated by a bone-setter. The majority of the cases which they cure are, however, cases of joint strain which have recovered from the usual reaction of a joint to trauma or mild arthritis, but the patient still complains of pain on certain movements. During the stage of active reaction forcing of movements can do nothing but harm, but there does come a time following injury at which forcing of movements, although painful at the moment, may be dramatically effective in its results. It will not, however, usually be necessary if other measures have been adopted to restore the fullest possible range of painless movement.

The volume of recent literature dealing with injuries of the knee-joint is a sure indication that the question of their diagnosis and treatment has not yet been standardised. This is probably due to the fact that the frequent association of injuries makes the presentation of the clinical picture and the assessment of the value of statistics difficult.

These observations on some of the common injuries of the knee-joint are offered so that we may by our discussion help to clarify some of the problems which we all meet.

I am much indebted to Mr. A. M. Hendry for his help in reviewing the cases, and to Dr. Brailsford for preparing the slides and photographs.

Summary

1. That damage to an intra-articular fibrocartilage occurs in almost 50 per cent. of severe injuries of the knee-joint. 2. That the posterior segment of the cartilage is most frequently the site of the primary injury. 3. That lesions of the external semilunar cartilage are relatively more frequent than published statistics would suggest. 4. That congenital abnormality of the external cartilage may frequently be diagnosed in childhood, and should be dealt with surgically. 5. That a loose body causing a sudden persistent irreducible limitation of extension is wedged in the intercondylar notch. 6. That in repair of lesions of the extensor apparatus muscle pull should be overcome by a removable suture. 7. That the results of operation for repair of rupture of the crucial ligaments are uncertain, and that a complete recovery of function may take place as a result of conservative treatment. 8. That while accurate diagnosis of an original injury may be difficult, the cause

of a recurrent lesion can usually be established as a result of a carefully taken history, together with clinical and X ray findings. 9. While conservative or manipulative treatment is successful in many cases, a surgical exploration of the joint will always be necessary for the cure of a large number. 10. In the surgical approach to the inner side of the knee, incisions which may divide the patellar branch of the internal saphenous nerve should be avoided.

REFERENCES

1. Dunn, N.: Brit. Med. Jour., 1931, ii., 630.
2. Jones, R.: Ann. of Surg., 1909, l., 969.
3. Martin, A. M.: Proc. Roy. Soc. Med., 1912–13, vi. (Sect. Surg.), p. 23.
4. Campbell, Willis C.: Jour. Bone and Joint Surg., 1931, xiii., No. 2, p. 223.
5. Henderson, M. S.: Jour. Amer. Med. Assoc., 1928, xc., 1359.
6. Fisher, A. G. Timbrell: Internal Derangement of the Knee-joint, London, 2nd ed., p. 27.
7. MacAusland, W. R.: Ann. of Surg., 1931, xciii., 649.
8. Surls, J. K., and Osgood, R. B.: Jour. Bone and Joint Surg., 1923, v., 635.
9. Mitchell, J. I.: Ibid., 1930, xii., 640.

THE RÔLE OF THE LIVER IN THE METABOLISM OF CARBOHYDRATE AND FAT*

By C. H. Best, M.D., D.Sc. Lond., F.R.C.P. Canada

PROFESSOR OF PHYSIOLOGY IN THE UNIVERSITY OF TORONTO

III.—THE DEPOSITION OF LIVER FAT

In the first lecture of this series the evidence that the liver is an important site of formation of the ketone bodies was briefly reviewed. The rapid disappearance of these substances from the blood of diabetic animals after removal of the liver, their formation from long chain fatty acids with an even number of carbon atoms in the perfused liver, and the behaviour of these fatty acids when incubated with liver slices, furnish the main points which permit us to attribute to this tissue a special significance in the oxidation of fatty acids. I will not attempt to discuss this phase of the subject in detail or to review the evidence for the attractive hypothesis that fatty acids are desaturated in the liver. It appears at present that selective retention by the liver cells of the more unsaturated fatty acids may provide as satisfactory an explanation of the facts observed as does desaturation. Recent work indicates that the double bond may not always be the point of rupture of the fatty acid chain.

The excessive increase in the neutral fat of the liver, the so-called "fatty infiltration," and the change in the physical characteristics of the fat with more or less extensive damage to the liver cells, the so-called "fatty degeneration," are the most striking phenomena encountered in a superficial study of the rôle of the liver in the metabolism of fat. The multiplicity of conditions in experimental work and clinical studies with which excessive deposition of fat in the liver may be associated indicates either that these conditions produce some effect common to all of them or that one of the most easily disturbed properties of liver cells is their ability to deal with fat.

Little information is available on the effect of different fatty acids in the production of fatty livers. Miss Ridout and I found that certain saturated fats tended to produce greater deposition of liver fat than unsaturated mixtures. On the other hand, two fatty materials, butter and beef dripping, iodine numbers 32 and 40, varied greatly in this regard. Beef dripping was much more effective than butter. We soon realised, however, that among the significant factors the choline content of these mixtures must be considered, and that until this had been determined the effect of unsaturation or of the number of carbon atoms of the ingested fatty acids on the deposition of fat could not be decided. It is now known that the amount of depôt fat influences the extent of the deposition of fat in the liver during starvation (Mottram; Dible). A complete statement of the conditions which lead to these changes is unnecessary, but I may remind you that they are observed in the first stage of starvation, and are easily produced in the livers of young animals of many species by diets rich in fat. The amounts required to produce similar effects in adult animals of some species, the dog for example, are much greater. Prominent among the list of substances which may induce these fatty changes are cholesterol, alcohol, phloridzin, chloroform, phosphorus, carbon tetrachloride, and phenylhydrazine. Bacterial toxins may cause an unmasking of the liver fat and also an increase in the amount. Extensive fatty changes are, of course, characteristic of experimental and clinical diabetes in the absence of insulin. Pregnancy in rabbits may be accompanied by fatty changes (Mottram), but in the experience of Huntsman and MacLean in my laboratory these are seen much more frequently in rats. Pernicious anæmia, yellow fever, acute yellow atrophy, eclampsia, and poisoning with some of the chemicals listed above are among the many clinical conditions in which "fatty livers" are encountered.

The mechanism of production of these fatty changes is obscure, but it is fascinating to speculate, as Fischer and Hooker have done, that in many of these conditions the alkali reserve of the liver cells may be decreased. While there is no direct evidence for this hypothesis it is worthy of extensive investigation. Experiments in which ammonium chloride has been fed to rats have thus far provided no support (Huntsman). I will not attempt a comprehensive discussion of these fatty changes but will take the opportunity of presenting to you a series of results which, even if their physiological importance should prove to be slight, have served to attract to this fascinating field a new group of workers. This study of certain of the factors which control the deposition of liver fat is an outgrowth of the insulin investigation in Toronto and may be said to have its inception in the work of Allan, Bowie, Macleod, and Robinson,[1] who found it necessary to provide fresh pancreas in the diet of depancreatised dogs in order to enable the animals to live for more than five or six months under the prevailing experimental conditions. When pancreas was not provided the animals eventually died, and at autopsy presented very fatty livers as the outstanding—and in some cases the sole—abnormal feature. I think the story will be somewhat clearer if I state at this point that results have recently been obtained which suggest that some influence is affecting the liver cells of these diabetic animals which prevents them from performing their normal functions, before there is an obvious or even a detectable increase in fat.

The evidence for this statement is based upon study of liver tissue in several animals which were apparently in the same condition, in so far as rate of sugar production by the liver was concerned, as others in which abnormal amounts of liver fat were found. The usual history of the diabetic dogs is that after pancreatectomy they excrete large amounts of sugar on a fixed diet and dosage of insulin, but that the glycosuria becomes less and less, until little or no sugar is present in the daily urine samples. If a sample of liver is then obtained, the total fatty acid plus unsaponifiable fraction may not be abnormally high. Some animals may excrete little or no sugar on a low insulin dosage for several months without exhibiting this excessive deposition of liver fat.

* Three lectures delivered for the University of London at University College on Jan. 11th, 15th, and 18th.

This finding might easily have been overlooked for a much longer period of time if we had not adopted the practice of obtaining evidence by analysis of liver tissue obtained at biopsy rather than depending upon the insulin requirement, the excretion of sugar and bile-pigments, on the results of liver function tests and on the general health of the experimental animal, as indices of the state of the liver cells. This falling off in sugar excretion is not due to depletion of the glycogen reserves. Our attention has, of course, been focused on the anterior pituitary and this gland is being carefully examined in the hope that the histology may suggest the state of its activity under these conditions. Another possibility, which is difficult to eliminate, but for which we have obtained no evidence, is that a few islet cells have regenerated. The most likely explanation appears to be some change in the liver cells which proceeds and possibly predisposes them to the fatty changes.

In many of these animals large amounts of fat eventually accumulated in the liver. The diet which they received was low in calories—300 g. lean beef, 100 g. sucrose. It was found, as stated above, that the accumulation of liver fat in these diabetic dogs did not occur when fresh pancreas, 100 g. daily, was provided.

Macleod and his co-workers naturally considered the possibility that pancreatic lipase might be concerned in this effect, and this feeling was perhaps strengthened when the fatty livers were not observed in animals which received a commercial lipase preparation. This material is usually prepared by "defatting" the minced glands with acetone, a procedure which does not remove more than a small amount of the phospholipoid. Prof. Macleod was primarily interested in the metabolism of carbohydrate in these diabetic dogs but he provided facilities for Hershey to continue the investigation of these fatty changes. The problem was to determine the constituent of the pancreas responsible for the effect. The great difficulty in this very tedious type of experimentation is that the dogs exhibit vitamin deficiencies and it is usually not feasible to provide highly purified fractions in the large amounts necessary. The possibility that the phospholipoid fraction might be exerting an effect on liver fat was made prominent by Leathes' emphasis on the probable significance of these substances in fat metabolism. Since it was not feasible to prepare this material from pancreas, a commercial phospholipoid fraction from egg yolk was first investigated by Hershey.[1] These experiments were continued in the Department of Physiology from 1926 to 1932 and the results (Hershey and Soskin; Best and Hershey) eventually convinced us that the phospholipoid fraction from egg yolk not only exerted an effect comparable to that of the fresh pancreas, as the original findings had indicated, but that the action of the former material was not due to the vitamins which it contained. In subsequent experiments upon these diabetic dogs, vitamins (Bemax, activated ergosterol, and tomato juice) have been provided.

The onset of fatty changes in the liver, apparently similar to those previously studied, can be produced relatively rapidly in most of these animals by adding fat to the diet. We studied many dogs before we encountered one which would retain large amounts of ingested fat without exhibiting these characteristic changes in the liver cells. An animal which is remarkably resistant to these effects of a diet rich in fat has been encountered recently. Experiments upon diabetic dogs are very tedious, and in the search for more satisfactory test objects for these effects produced by the phospholipoid fraction we found that normal white rats could be used (Best, Hershey, and Huntsman). Some component of this material prevents the deposition of fat in the liver, which takes place when rats weighing between 150 g. and 250 g. are placed on a diet containing 40 per cent. beef suet. In the search for the active component of the phospholipoid Miss Huntsman and I found that this was choline, and we have had occasion to use choline to prevent deposition of fat in the livers of rats in a large number of experiments.

The chemical results of a certain group of these experiments are summarised in Table I. The figures in this table show that the livers of animals fed upon a stock diet with 40 per cent. added fat contain on the average 14·2 per cent. fatty acid plus unsaponifiable material, while those which have received what may be considered an adequate dose of choline have an average value of 4·5 per cent. It is satisfactorily established, therefore, that choline possesses the property of preventing deposition of fat in the rat's liver under the conditions of these experiments.

TABLE I

Stock diet plus fat (fat 40 per cent. of total food) for 21 days.

No. of rats.	Choline daily. mg.	Fatty acids of liver per cent.
203	—	14·2
109	75	4·5

To make sure that this effect of choline in rats was not a quite different matter from the action of the phospholipoid fraction in diabetic dogs, Ferguson, Hershey, and I[2] investigated the effects of choline in these latter animals.

In some dogs the sugar excretion is apparently greatly increased by choline administration, and there is reason to believe that deposition of fat in the livers of these animals, or perhaps better, the development of the condition which leads to decreased sugar excretion, is prevented by choline. It is always more satisfactory to demonstrate the change produced by a substance in an individual animal and not to rely upon the differences exhibited by a series of control and test animals. This is particularly important in these experiments with diabetic dogs because it is seldom possible to use more than a limited number. Evidence based upon direct examination of liver tissue (Best, Ferguson, and Hershey) in an individual animal has been presented which appears to demonstrate that choline is effective in decreasing the fat content of the liver. In this particular animal chemical analyses made on a section of liver secured on a certain date revealed the presence of 20·6 per cent. fatty acid. The diet and insulin dosage were maintained at a constant level. Choline was provided and one month later another section of liver was secured. The content of fatty acid was 6·7 per cent.

This result appears to provide satisfactory evidence that choline is effective under certain conditions in decreasing the fat content in the liver of a diabetic dog and suggests that the action of choline is curative as well as prophylactic. It is reassuring that Miss Huntsman and I have been able to demonstrate what appears to be a similar phenomenon in rats. It has been possible to show that choline not only prevents the accumulation, but also causes the disappearance, of excess fat from the livers of rats.

In the first curative experiment the control animals with fatty livers were allowed to remain on the diet rich in fat. The test animals received choline. At the end of 21 days the test animals had a normal content of liver fat, while the livers of the controls were uniformly fatty. In the second experiment the control animals received, instead of the diet rich in fat, the stock diet composed of mixed grains. The test animals received the same amount of the grain diet and, in addition, choline. The figures show that the fat disappeared more rapidly from the livers of those animals which received the added choline.

More recently Miss Huntsman and I have conducted a different experiment.

Fatty livers were produced in a large group of rats by feeding fat in the customary manner. The control animals were then placed on a diet containing 80 per cent. sucrose

and 20 per cent. "fat-free" casein (British Drug Houses). The 2 g. of casein which each rat received daily contained 6 mg. of fatty acid. The test animals received the same diet as the controls, but in addition 70 mg. of choline per day. The decrease in the fat content of the livers of the test animals was very rapid, but the fat content of the livers of the control animals remained at quite a high level. The interesting point arises as to whether or not the difference in the fat content of the two groups of control animals is related to the choline content of the diet which they receive. Analyses for choline made for us by Mr. Fletcher indicate that the animals on the grain diet were receiving 10 mg. of choline daily, while the animals on the sucrose and casein ration received only approximately 1 mg. of choline daily. The minimum effective amount of choline has not yet been determined accurately, since in the past we have not paid sufficient attention to the choline content of our stock diets. It appears very likely, however, from the figures which we have available, that 10 mg. per day is an effective, although not an optimal, dose for a rat under these conditions.

These results, together with those which Miss Ridout and I had obtained earlier, indicate that future experiments on diabetic dogs and normal rats should be conducted with the control animals on a choline free diet. These experiments are interesting from two other points of view, and I may have occasion to refer to them again. You will remember that Rosenfeld [4] has shown that diets high in carbohydrate may prevent the development of fatty livers in phloridzin poisoning. It is apparent from our results that choline is much more effective than a diet containing 80 per cent. sucrose and 20 per cent. casein in the elimination of the deposits of fat from the livers of these white rats. The second point to which I would like to call your attention is that these results exclude the possibility that the principal effect of choline is to decrease the rate of absorption of fat from the intestine. I will discuss this matter again later. One other result may be briefly mentioned. Miss Huntsman and I planned another experiment to determine the relative merits of a very high carbohydrate diet and of choline in the cure of these fatty changes.

Rats with fatty livers were placed on a diet composed exclusively of sucrose. One-half of the animals received choline. The livers of the sucrose fed animals became steadily more fatty until at the end of twelve days an average value of 24 per cent. was reached. The animals receiving choline responded in much the usual way and the average fat content after twelve days was approximately 5 per cent.

This unexpected increase in liver fat when the diet contains no choline provides us with further problems.

Another point which may be mentioned here is that Miss Ridout and I found, in confirmation of previous workers, that the addition of cholesterol to the diet of rats or rabbits produces very intensive fatty infiltration and degeneration of the liver. It has been shown that this change may be prevented in rats if sufficient choline is added to the diet. Much more is required in these experiments than in those in which fatty changes were produced by feeding fat. This point has not received sufficient attention from other investigators, who have stated that their results were not completely in harmony with ours. While we have not as yet had an opportunity of investigating many substances similar in chemical structure to choline, it has been shown that betaine is effective in preventing the development of fatty livers in rats which are receiving a diet rich in fat (Table II.) or in cholesterol.

TABLE II

Fat diet. Length of experiment: 21 days. 7 g. stock diet plus fat (fat 40 per cent. of total food) per rat per diem.

No. of rats.	Average change in wt. (g.).	Betaine daily. (g.)	Fatty acids in liver. (%)	Iodine No.
19	+5	—	21·8	84*
20	+7	0·10	4·0	104*

* Average for 10 rats only. (Best and Huntsman.)

Choline and the Fatty Liver of Starvation

Miss Huntsman has had the opportunity of securing large numbers of figures on the increase in the fat content of the rat's liver during starvation. If choline is given only during the period of starvation an effect is not clearly demonstrable, but if it is added to the stock diet for some weeks previously and during the period of starvation the accumulation of liver fat does not take place. These results suggest that some of the choline may be stored or that it is possible to affect the mechanism which controls the deposition of liver fat by the previous administration of choline. We have not as yet found it possible, however, to detect any difference in the amount of fat deposition in the livers of rats when they are placed on a diet rich in fat after they have received for a period of three weeks large amounts of choline in addition to the stock diet. The livers of the animals receiving the choline are quite as fatty as those in the control groups. It is rather difficult without using very large numbers of rats to demonstrate a definite deposition of fat under these conditions before the animals have been on this diet for six or seven days. At the end of this interval there is no difference in the fat content in the livers of the two groups. There may be a definite difference during the first few days. One would not expect that large amounts of choline could be stored.

It may be pointed out here that the total choline in a tissue can be quite satisfactorily estimated by freeing the bound choline by acid hydrolysis in alcoholic solution. The alcohol and much of the acid are removed by distillation. The choline may then be acetylated and the acetylcholine assayed against standard acetylcholine on the isolated rabbit's intestine. Fletcher will report in due course the results of choline estimations on the various tissues of rats, some of which have received choline in large amounts. The question of whether any choline exists in a free state in the body has perhaps not been settled, though the recent report of Strack, Neubaur, and Geissendörfer [5] holds considerable interest. Their results and those which have been obtained in my department suggest that there is very little free choline. Fletcher and Solandt find that beef pancreas contains approximately 200 mg. per cent. of choline. The diabetic dogs studied by Allan et al. received approximately grs. 100 of pancreas per day. If these animals had received grs. 500 or 600 of beef muscle, as many diabetic dogs do, the choline content might have been sufficient to postpone the onset of the fatty changes. On the other hand, the data we have at present available do not suggest that 200 mg., the amount available in the pancreas, would be an effective curative dose of choline. It might well be sufficient to postpone the onset of the fatty changes. There is a possibility that betaine and other substances closely related to choline may also be present in appreciable amounts in this tissue. When studies of choline content of tissues are made precautions should be taken to prevent enzymatic loss of the active material (Bernheim; Fletcher).

The Mechanism of Action of Choline

If we knew more about production of fatty livers by such agents as phosphorus or chloroform, and so forth, a lead to the mode of action of choline and betaine might be supplied. The most obvious way in which choline might affect liver fat would be to decrease the amount absorbed. However, we have never been able to obtain any evidence that fat excretion is increased by choline. Furthermore, there is no difference in the change of weight in animals with and without choline. Miss Huntsman, Solandt, and I were never able to find any change in body fat in the animals which received choline. The experiments with which Miss Ridout, Prof. Channon, and I have recently been occupied provide satisfactory evidence that there is no appreciable change in the amount or character of the depôt fat attributable to choline. The possibility still exists, however, that although the amount of fat absorbed was not decreased the rate might be affected. It is possible that the rapid absorption of fat would produce fatty livers while the slower absorption might not. Miss Huntsman and I have demonstrated that it is not necessary for the choline to be administered with the fat, and also that choline administered subcutaneously definitely decreases the deposition of liver fat. If the choline hydrochloride is given in the morning and the rat is fed once a day in the late afternoon, the effect on liver fat is easily demonstrable. None of these experimental results eliminate the possibility that choline affects the permeability of the intestine to fat. As I have mentioned previously, we have not as yet been able to secure a reliable method by which the effect of choline on the absorption of fat can be determined. Work on fat tolerance curves has been abandoned, and up to the present the amount of fat which will be absorbed in the intestine of the rat in a certain time cannot be predicted with any certainty. The results which I have quoted previously, however, show that absorption cannot be an important factor. It will be remembered that in one of the experiments the animals were placed on a diet containing very little fat, about 6 mg. per day per rat. If choline had completely prevented the absorption of fat throughout the whole experiment the maximum loss to the liver would have been 60 mg. Since the liver of the control rats contained on the average 10 per cent. fatty acid at the end of the experiment and would weigh about 7 g., each would contain approximately 700 mg. fatty acid. The livers of the test rats contained 2·8 per cent. fatty acid and would weigh about 5 g.—i.e., each would contain approximately 140 mg. If the effect had been to prevent absorption, the 60 mg. present in the diet would produce relatively little effect in view of the fact that the liver has lost approximately 560 mg. Evidence pointing in this same direction is obtainable in the experiments on starved rats. It appears justifiable, therefore, to conclude that the chief action of choline is not on the absorption of fat.

Another possibility is, of course, that the oxidation of fat in the liver is increased. Miss Ridout has thus far been unable to obtain any evidence of increased oxygen uptake in rats which have received choline, but this result throws no light on what may be happening in the liver cells. The situation at the moment is, therefore, that this easily demonstrable action on liver fat is the only established effect of choline on fat metabolism.

One will hesitate a long time before concluding that this is in reality the only action of choline, but a study of the recent data in which Miss Ridout, Prof. Channon, and I are greatly interested, also focuses attention on the liver. These data are worth considerable study, and will be published in detail in due course. With the permission of my collaborators, I will review very briefly some of our findings and deductions. When fat is provided in the diet of white rats there is an accumulation of neutral fat in the liver. An increase in neutral fat can also be produced by cholesterol feeding, and under these circumstances there is also an increase in cholesterol ester and a very slight rise in free cholesterol. The main, and perhaps the initial, effect of choline is on the neutral fat of the liver, which is reduced to very low levels if adequate amounts of the base are provided. In the cholesterol-fed animals there is also a very definite decrease in the cholesterol ester, while the free sterol is practically unchanged. Choline has apparently very little effect on the phosphatide fraction. The improvement in liver function, which in some cases follows the administration of choline to diabetic dogs, may in part be due to elimination of the excess of neutral fat from the liver cells. The amount of fat which disappears from the liver is, after all, very small, and it is not surprising that it should escape detection if it is oxidised or carried to other tissues.

The deposition of fat in the liver is due either to the fact that excess is being presented to it, that the rate of oxidation or the retention of fat by the liver cells is changed, or that the factors which normally take fat away from the liver are not operating with sufficient speed. There is no increase in blood fatty acid when the liver becomes fatty in these diabetic dogs. The effect of choline on blood fat needs further study but we have no lead in this direction as yet. One of the most important possibilities is that choline stimulates the liver cells to oxidise fatty acids. Quastel's recent report suggests that the liver slice technique may permit the investigation of this problem in the Warburg apparatus.

There is another possibility to be considered. Early in this lecture I referred to the finding that the diabetic dogs lose some of their ability to produce sugar before there is any accumulation of fat in the liver. Miss Huntsman and I are now studying the effect of choline on sugar excretion under these conditions. If positive results are obtained the possibility will have to be considered that the action of choline on liver fat is secondary to one on sugar production.

The results of these researches have, I believe, provided us with new tools by the intelligent and energetic use of which our knowledge of fat metabolism may be augmented. Liver fat may be decreased by prolonged starvation, by thyroid feeding, or by insulin administration. We are not likely to under-estimate the significance of insulin in this connexion, but in diabetic dogs with a constant and apparently adequate amount of insulin and in normal rats receiving a diet rich in carbohydrate, which stimulates the liberation of insulin, choline exerts rather dramatic effects on liver fat.

It is a pleasure to acknowledge my indebtedness to my colleagues, whose names appear in the text, for their most helpful interest in these lectures.

REFERENCES

1. Allan, F. N., Bowie, D. J., Macleod, J. J. R., and Robinson, W. L.: Brit. Jour. Exper. Path., 1924, v., 75.
2. Hershey, J. M.: Amer. Jour. Physiol. (Proc.), 1930, xciii., 657.
3. Best, C. H., Ferguson, G. C., and Hershey, J. M.: Jour. of Physiol., 1933, lxxix., 94.
4. Rosenfeld, R.: Arch. exp. Path. u. Pharm., 1932, clxvi., 211.
5. Strack, E., Neubaur, E., and Geissendörfer, H.: Zeit. f. Physiol. Chem., 1933, ccxx., 217.

A NEW TECHNIQUE FOR THE SELF-ADMINISTRATION OF GAS-AIR ANALGESIA IN LABOUR

By R. J. MINNITT, M.D. Liverp.

HON. ANÆSTHETIST, ROYAL INFIRMARY, DAVID LEWIS NORTHERN HOSPITAL, AND LIVERPOOL MATERNITY HOSPITAL, LIVERPOOL; HON. LECTURER IN ANÆSTHETICS, UNIVERSITY OF LIVERPOOL

SOME analgesic for the sufferings of parturient women has been sought for a long time by those who sympathise with them. While gas-and-oxygen anæsthesia has been a satisfactory solution to the problem, the cost of the equipment and the necessary supervision by a medical man make it unavailable for the large majority of patients in labour. There appears, however, to be no question that the use of nitrous oxide should be developed. A method has therefore been evolved to combine this gas with a definite proportion of air, so that the constant mixture employed would produce analgesia without loss of consciousness.

The apparatus devised for this purpose was an adaptation of a McKesson oxygen therapy apparatus, and consists of a reduced pressure regulator, combined with a small rubber bag enclosed in a metal drum, so arranged that an automatic valve prevents the flow of gas when the patient does not inhale. The outlet of the machine is divided into two channels, one for the passage of gas and the other for air, admitted in a constant amount making a mixture of approximately 35 per cent. nitrous oxide in air. On the face-piece is fitted a spring finger release, which is pressed down during inhalation, but allows full air (thereby throwing the machine out of action) if the analgesia becomes deep enough to weaken the force used, or at the will of the patient. The expiratory valve is in the face-piece—non-adjustable, a spring allowing it to rise with expiration.

There are two models made, one in a carrying case as a portable model (Fig. 1) (overall size 12 in. × 8 in. × 18 in.; weight about 15 lb. without cylinders), and the other on an aluminium stand for hospital use (Fig. 2). The amount of gas consumed is on the average 35 to 40 gallons per hour; this depends on the frequency of pains and depth of breathing.

As the analgesia is self-administered the coöperation of the patient is essential. The important point is that at all times when inhaling the mixture from the machine the face-piece must fit in an air-tight manner.

Scientific work has been done in the Liverpool Maternity Hospital to show that there is no danger to mother or child by the use of the analgesia. Electrocardiograms were taken of a series of patients immediately before and at the end of the administration, and again a day or two later. Dr. Leslie Cunningham, Medical Officer in Charge of the Electrocardiograph Department of the David Lewis Northern Hospital, Liverpool, kindly reported upon these, and stated that they did not appear to be influenced to any significant extent as a result of the patients' experience. The alteration in the mother's pulse and the fœtal heart rates, estimated at approximately equal intervals during analgesia, were within normal limits.

A biochemical study was made of blood taken from a maternal vein and the umbilical cord in a number of patients immediately after delivery, with and without analgesia, and conclusions were drawn that although the administration of gas and air reduced the oxygen content of the mother's blood, that of the umbilical cord did not show any marked alteration.

As far as could be ascertained from observations made on 81 primigravidæ and 47 multigravidæ, making use of the analgesia for varying times, including delivery, the average length of the second stage was within normal limits.

The apparatus has been in constant use, both at the Liverpool Maternity Hospital and the Wellhouse Hospital, Barnet, Herts, since the middle of October last, and over 300 cases have had the benefit of the analgesia. In the former of these hospitals the method of the administration has been supervised by Dr. Hilda Garry, under my direction, a grant having been given to the hospital by the National Birthday Trust Fund. In the latter Dr. John Elam, of Barnet, enthusiastically organised the inauguration of the new technique, under the supervision of Dr. H. Roland Segar, the Medical Superintendent. Except in a few cases which were found unsuited for this form of analgesia, the relief from pain and distress was uniformly very good, both during the second stage and at the delivery. The failures, which did not come to more than 9 per cent. of all the cases observed, were due to the following causes:

(1) Non-coöperation of the patient.

(2) Dislike of inhaling anything which might produce unconsciousness, there being some difficulty in persuading this type of patient that this would not happen.

(3) Hysterical conditions, which prevented the proper control of the method.

(4) A tardy administration, which meant that education of the patient in the proper use of the apparatus was not possible before the birth of the child. The earlier the administration is commenced the greater is the relief, as there is more time for acquiring coöperation.

From my personal observation I feel that this new

FIG. 1.—Portable model.

FIG. 2.—Hospital model.

technique has the following advantages. First, there is analgesia, which I define as insensibility to pain without loss of consciousness, so that the patient is able to understand and carry out any instructions given. Secondly, the apparatus is under her personal control, which permits the general practitioner or midwife to carry on the obstetric work without interference. Thirdly, the well-being of the patient both during labour and afterwards is conspicuous. It should be realised, however, that the apparatus was only designed for use in normal labour, and therefore is not applicable for such procedures as version, the application of forceps, or any extensive repair of the perineum. Anything of this kind carried out under analgesia, and not anæsthesia, might give rise to grave symptoms of shock.

As a general rule cyanosis should not appear during administration, although when the patient is holding her breath owing to bearing down slight blueness may be observed. As cyanosis is one of the signs of serious heart or lung disease, any depth of this should raise suspicion and the cause should be sought.

I can see no reason why an organised scheme should not be developed for the use of the method in domiciliary work (for patients attended by midwives) and I look forward to the day when the authorities will coöperate with the public in this enterprise.

Messrs. A. Charles King Ltd., London, are the manufacturers of the apparatus, which is known as the Minnitt gas-air analgesia apparatus.

UNIVERSITY OF LONDON.—It is announced that the Kent County Council have decided to make a grant of £40,000, payable over ten years, towards the cost of erecting new university buildings on the Bloomsbury site. The Worshipful Company of Butchers have also made a grant towards the ceremonial hall to be built on the site.

VITAMIN C IN THE HUMAN PITUITARY

BY J. GOUGH, M.D. Wales

LECTURER IN PATHOLOGY IN THE WELSH NATIONAL SCHOOL OF MEDICINE, CARDIFF

AMONG the methods which have been devised for the detection of ascorbic acid (vitamin C) is the histochemical test of Szent-Györgyi.[1] This depends on the strong reducing properties of ascorbic acid, and when tissues rich in this substance are brought into contact with a dilute solution (0·4 per cent.) of silver nitrate for 15 minutes (in the dark) they become blackened from deposit of reduced silver. In animal tissues Szent-Györgyi found the strongest reaction to be obtained in the adrenal cortex, whilst in certain other tissues, such as brain, liver, and muscle, the reaction was practically negative, and he therefore concluded that the adrenal is specifically concerned with ascorbic acid. Later, Gough and Zilva [2] found that the anterior lobe of the pituitary in certain species—e.g., man, ox, and dog—yielded a stronger Szent-Györgyi reaction than the adrenal, and also that the corpus luteum in the dog was relatively strongly reacting. Further, they found by biological assay that the antiscorbutic potency of the anterior lobe of the ox pituitary was about twice as great as that of the adrenal. The pituitary, in the ox at least, appears to be the richest of the known vitamin-C containing tissues, and seems indeed to be as rich as any of the well-recognised natural sources of the substance, such as mango (Perry and Zilva [3]) and paprica (Svirbely and Szent-Györgyi [4]). Regarding the corpus luteum, Huszák [5] has shown by biological assay that this tissue in the pig contains as much vitamin C as the adrenal. Thus the three tissues which are already known to give a strong reaction with the silver nitrate test have been shown by other methods to be rich in the vitamin.

THE HUMAN PITUITARY

Applying the silver nitrate test to material from 42 hospital autopsies, Gough and Zilva found that the pituitary in man practically invariably stained darker than the adrenal, but they also noted that there was a considerable variation in the intensity of the reaction in different individuals. A series of 100 cases have now been examined, and the observation has been made that the intensity of the reaction in the pituitary runs roughly parallel with the state of nutrition of the body, as judged by the presence or absence of emaciation. On the whole a poor reaction occurs in persons who have suffered prolonged illness and are obviously emaciated, whilst a strong reaction is usually seen in those who appear to have suffered no appreciable disturbance of general body nutrition as a result of the fatal illness.

INTENSITY OF THE REACTION IN RELATION TO DISEASE

The Szent-Györgyi silver reaction was applied to 100 consecutive post-mortem cases of death from various diseases, and the cases were investigated and classified according to the intensity of the reaction into the following four groups—viz., strong, moderate, slight, and negative reactions.

Strong reaction (38 cases).—General nourishment of the body appeared approximately normal in 34. There was obvious wasting in only 4, and in none of them was this severe. The majority of the cases were of rapidly fatal illnesses. Of the 4 which showed wasting 3 were children 2–5 years of age dying of septic meningitis, pyonephrosis, and strangulation of the intestine respectively. The fourth was a woman of 36 years dying of cystitis one

month after parturition. Of the remaining 34 cases—i.e., those in which nourishment was normal—17 were of illnesses lasting less than seven days, including 11 of acute infection (septicæmia, pneumonia, and meningitis), 2 of post-partum pulmonary embolism, 2 of obstructed labour, 1 of strangulated intestine, and 1 of ruptured basilar aneurysm. Seventeen cases were of longer illness, but of these 4 were ambulatory cases of papilloma of larynx, fibroid uterus, meningioma, and glioma respectively, in which death followed within 24 hours of surgical operation. These were virtually short illnesses. The remaining cases were: 3 of cerebral abscess, 2 of gummatous meningitis, 2 of leukæmia, and 1 each of tuberculous pericarditis, acute myelitis, aortic aneurysm, gastric ulcer, pseudohypertrophic muscular palsy, and carcinoma of the colon. In the last-mentioned case there was no apparent wasting and the first symptoms, due to acute intestinal obstruction, occurred ten days before death.

Thus although the cases giving a strong reaction were of a miscellaneous nature, they did not include a single case of long-standing disease with severe emaciation.

Moderate reaction (25 cases).—General nourishment of the body appeared normal in 16. There was moderate wasting in 8 and severe emaciation in 1 (tabes dorsalis) case. The cases of moderate wasting were: 2 of carcinoma of stomach, 1 of carcinoma of bladder, 1 of carcinoma of adrenals, 2 of leukæmia, 1 of miliary tuberculosis, and 1 of pericarditis. Those of normal nourishment were 9 of acute infection (septicæmia, meningitis, pneumonia), 4 of chronic cystitis, and 1 each of cholecystitis, pericarditis, and cerebral softening. It is to be noted that the cases of carcinoma of stomach showed little wasting, and both died within a few days of surgical removal of the tumour.

Slight reaction (26 cases).—Thirteen showed severe wasting, 9 showed moderate wasting, and only 4 appeared of normal nourishment. The cases of normal nourishment were cerebral softening, strangulated hernia, papilloma of bladder, and infantile convulsions. The cases of moderate emaciation were carcinoma of lung, glioma, empyema, chronic nephritis, congenital hydrocephalus, 2 of cystitis, and 2 of pernicious anæmia. The cases of extreme emaciation were carcinoma of lung, œsophagus, and pancreas respectively, malignant melanoma, sarcoma of jaw, Hodgkin's disease, obstructive jaundice, hyperemesis gravidarum, stenosis of œsophagus, 2 cases of gastric ulcer, and 1 of abscess of lung.

Nearly all the cases giving a slight reaction were thus of long-standing disease, and most of them showed emaciation.

Negative reaction (11 cases).—Eight showed severe emaciation and 2 moderate emaciation. In only 1 case was the general nourishment normal. All the cases were of illness longer than three months' duration. The case in which nourishment was normal was of carcinoma of the colon in a man of 75. The cases of moderate emaciation were syphilitic pneumonia and carcinoma of the tongue. The cases of extreme emaciation were 2 carcinoma of the stomach, 1 of œsophagus, 1 of lung, Hodgkin's disease, tuberculous peritonitis, pyelonephritis, and chronic ethmoiditis with meningitis.

In the 100 cases generally it will be seen that those in the first two groups are largely made up of deaths from short illnesses, while those which gave slight and negative reactions, on the other hand, are made up mainly of deaths from long-standing wasting diseases.

In order to ascertain as far as possible the state of the pituitary in the healthy individual, 7 cases of persons dying of rapidly fatal injury have been examined. Five of these gave a strong reaction (ages 16, 20, 21, 33, and 35 years), and two gave a moderate reaction (ages 63 and 67 years). The first-mentioned degree may thus be tentatively accepted as usual in younger persons, and the moderate degree in those over 60, and throughout the whole series it was noted that the reaction tended to be stronger in the young and middle-aged than in the aged. Strong reactions have been found in individuals of ages ranging from a few months to 60 years. It is interesting to note, however, that in the newly born the reaction was only of moderate intensity. (During the course of this investigation four cases of neonatal death were examined. These are not included in the cases dealt with above.) There was no obvious seasonal variation in the intensity of the reaction, and strong reactions were obtained as frequently in the winter as in the summer months. In this connexion, however, it may be pointed out that the temperature at which the reaction is carried out must be standardised, as it has been found that at low temperature the reaction is retarded. In the present work the tests were carried out at normal room temperature. The time at which the autopsy was carried out after death did not appear materially to affect the intensity of the reaction, provided that it was not greater than 60 hours. All the bodies used in this investigation had, however, been kept in a refrigerator.

DISCUSSION

In guinea-pigs, withholding of vitamin C from the diet depletes the content normally present in the adrenal (Svirbely [6]; Svirbely and Szent-Györgyi [4]), and causes a diminution of the silver reaction (Moore and Ray [7]; Siehrs and Miller [8]). That the failure of the human pituitary to give the reaction in certain cases is due to a diminished content of the vitamin would seem to be a natural conclusion. Harris and Ray,[9] however, have cast doubt on the reliability of a negative silver reaction as an index of the absence of vitamin C. They base their views chiefly on the fact that in the ox the adrenal medulla, which contains a large amount of vitamin C, fails to give the reaction. They, and Huszák,[10] have suggested that in this tissue there is a substance which inhibits the silver reaction, and Huszák has shown that if the tissue is first treated with lead acetate the reaction can be satisfactorily obtained. I have ascertained that the negative reactions in the human pituitary are not due to the same reason, for they remain negative even after the application of Huszák's modified test. Yet, since it has not been found possible to carry out biological assay on the human material, it seems unjustifiable to conclude definitely that the negative reactions in the human pituitary are due to absence of the vitamin. It is significant, however, that in healthy people dying as a result of accident or in those dying of acute disease the reactions were strongly positive, while in those dying of long-standing wasting diseases, especially when diet had been greatly restricted, the reactions were slight or negative. Thus although the reaction was comparatively weak in most cases of malignant tumour, it was weakest in those cases of carcinoma of the alimentary canal, where emaciation was most severe. Again, the pituitaries from two cases of gastric ulcer where diet had been restricted showed only a slight reaction, while in another where diet had been normal and death due to sudden hæmorrhage there was a strongly positive reaction. Perhaps the most significant case was that of a child aged five months which had been fed wholly on condensed milk. It developed severe rickets and died of convulsions. It did not show any signs of scurvy, but the Szent-Györgyi test for vitamin C gave only a feeble reaction in contrast to the intense one which was found in breast-fed infants dying at that age. It thus seems possible to connect the weak reactions with disturbance of food intake. Whether associated emaciation per se has any influence, it has not been possible to determine.

In conclusion it may be stated that Vogt [11] has found great diminution in the vitamin-A content of the pituitary in precisely those conditions which give a poor silver reaction for vitamin C—namely, chronic wasting diseases.

SUMMARY

The Szent-Györgyi test for ascorbic acid (vitamin C) when applied to 100 human pituitaries obtained at autopsies showed: (1) that the reaction in the anterior lobe was intense in young and middle-aged individuals in whom general body nourishment appeared normal; (2) that the reaction was slight or negative in individuals who had died of long-standing disease with severe emaciation; (3) that the reaction was less intense in the aged than in younger subjects.

REFERENCES

1. Szent-Györgyi, A.: Biochem. Jour., 1928, xxii., 1387.
2. Gough, J., and Zilva, S. S.: Ibid., 1933, xxvii., 1279.
3. Perry, O. E. V., and Zilva, S. S.: 1932, Empire Marketing Board: Preliminary Report on the Vitamin Content of the Mango.
4. Svirbely, J. L., and Szent-Györgyi, A.: Biochem. Jour., 1933, xxvii., 279.
5. Huszák, St.: Zeits. f. physiol. Chem., 1933, ccxix., 275.
6. Svirbely, J. L.: Biochem. Jour., 1933, xxvii., 960.
7. Moore, T., and Ray, S. N.: Nature, 1932, cxxx., 997.
8. Siehrs, A. E., and Miller, C. O.: Proc. Soc. Exp. Biol. and Med., 1933, xxx., 696.
9. Harris, L. J., and Ray, S. N.: Biochem. Jour., 1933, xxvii., 2006.
10. Huszák, St.: Zeits. f. physiol. Chem., 1933, ccxxii., 229.
11. Vogt, E.: Med. Klin., 1933, xxix., 1734.

HYDATID DISEASE OF THE LUNG

WITH A CASE REPORT

By R. G. Prosser Evans, M.R.C.S. Eng.

ASSISTANT TUBERCULOSIS PHYSICIAN, KING EDWARD VII. WELSH NATIONAL MEMORIAL ASSOCIATION, SWANSEA

Although hydatid disease is not rare in this country—contrary to the views often expressed by both physicians and surgeons—it may fairly be described as regional. For the past three years there have been admitted to the General Hospital, on an average, three cases each year from the Swansea district. These cases were mostly hepatic cysts. Human infection is usually due to eating unboiled vegetables soiled by the excreta of dogs or contaminated by flies (watercress is noted to be a frequent agent in the Swansea area). The swallowed ova develop into embryos which penetrate the wall of the bowel and are carried in the portal vein to the liver and thence to other parts of the body.

The commonest site for the disease is in the liver, the next frequent location is in the lung, in the ratio of about 10 : 1. Primary hydatid disease of the lung must be considered a rare form.

Klose [1] records only 4 cases of the primary form in a series of 62. In Megarth's [1] series of 93 children, only two showed the pulmonary site as early as 10 years. The secondary form of hydatid disease in the lungs may be due to rupture of a liver cyst or to metastases via the venous circulation or lymphatics.

Ortenberg [2] considers that when the disease metastasises by the blood stream the pulmonary lesion is always multiple and bilateral, the cysts are small and uniform in size, and are usually situated in the peripheral and subpleural portions of the lungs. The primary form may ante-date diagnosis for as long as six or even ten years. Ortenberg reports a case of rupture of a pulmonary hydatid cyst—probably of secondary origin—in a girl aged 12 years, with spontaneous recovery. Microscopic examination of the vomica in this case showed no hooklets; pus, elastic fibres, and alveolar cells were present. Puncture of the pleura was unproductive.

Green [3] describes a case in a child aged 11 years. The cyst ruptured into a bronchus, and microscopic examination of the vomica showed a laminated cyst wall and two scolices complete with hooklets. A blood count revealed a leucocytosis but no eosinophilia.

In 1908 Morquio [4] published in the *Archives de Médecine des Enfants* a memoir based on 12 cases. Since that time he has treated more than 100 cases. He mentions that the disease was more frequent in boys than in girls, and that the age of predilection is between 8 and 12 years. No cases were observed before the age of 4 years.

Hæmoptysis is said to occur in 60 per cent. of the cases of hydatid cysts of pulmonary origin. It may be the only clinical manifestation and varies in quantity and degree, although it is seldom very grave. A useful clinical classification is suggested by Morquio,[4] who groups his cases thus:—

(1) *Silent or latent.*—In this group there are no clinical manifestations, and the condition is discovered during routine radiographic examination—the appearances of which are characteristic.

(2) *Cases with physical signs and little or no functional disturbance.*—Repeated attacks of bronchitis are not without significance in this type. Occasionally a slight hæmoptysis occurs and physical signs may or may not be marked. A diagnosis of pulmonary tuberculosis or pleurisy is often made.

(3) *Cases with physical signs and symptoms.*—The

FIG. 1.—Radiogram taken three months after initial clinical examination.

FIG. 2.—Showing increase in size of lesion in the right lung, with cardiac and tracheal displacement to the left. The left lung is clear.

FIG. 3.—Lateral view, taken on the same date as Fig. 2. This localises the lesion mainly in the anterior part of the lung.

symptoms predominate in this group. They may be lassitude, dyspnœa on the least exertion, cough and expectoration, and sweats which are sometimes severe and persistent. The physical signs may or may not be marked.

(4) *Complicated cases.*—The pulmonary complications which may accompany the cyst are congestion, a peripneumonitis, lobar and broncho-pneumonia.

(5) *Cases in which the cyst ruptures into a bronchus.*—In Morquio's series of cases 50 of this variety are described.

The case to be reported here showed relatively few initial symptoms, but the physical signs were marked throughout.

DIAGNOSIS OF THE CONDITION

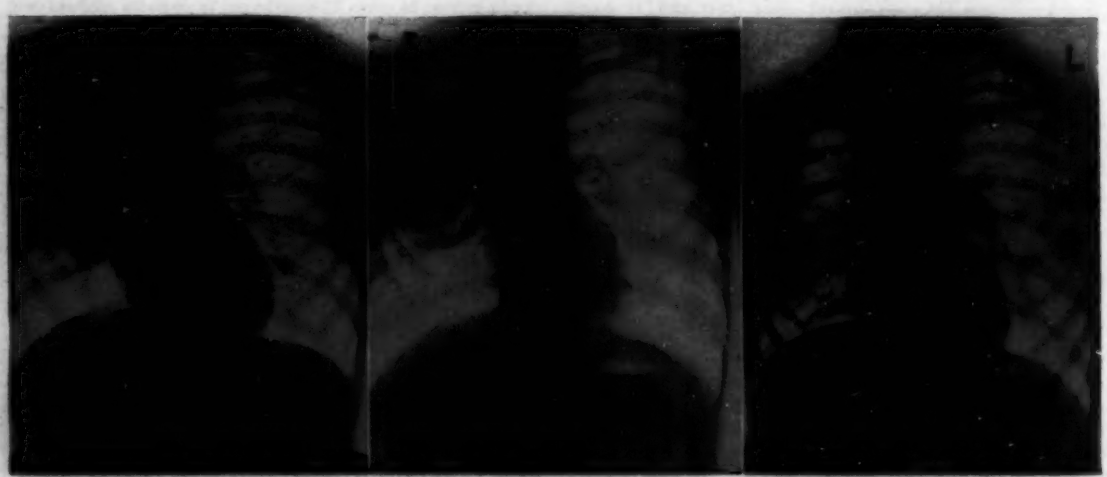
The diagnosis is clearly established after spontaneous rupture by finding hooklets, scolices, or portions of the cyst wall. Otherwise it may be fairly well confirmed by a correlation of the radioscopic appearances with the history, clinical and laboratory findings. If possible the sputum, vomit, urine, and excreta should be examined for hydatid membranes. The complement-fixation test of Axhausen, the precipitin-reaction test, and the Casoni intradermal test have been found reliable in a great proportion of cases, but it must be remembered that negative results do not negative the diagnosis and the presence of other tæniæ will vitiate the validity of the reactions. The blood count, too, typically showing an eosinophilia in hydatid disease, greatly assists in confirming the diagnosis, but again its absence does not negative it.

From the point of view of diagnosis the case reported here presented many difficulties. Owing to the initial diffidence of the patient's mother we were unable to carry out as many of the special investigations as we desired. The first clinical examination suggested a differential diagnosis between three conditions: (1) benign growth (cyst); (2) encysted effusion; and (3) pulmonary tuberculosis. The fact that the Pirquet cutaneous test was negative on two occasions was of no real significance in excluding tubercle as the cause; but with such marked physical signs as those present and the absence of any evidence of toxæmia, which one would expect to accompany these signs in a tuberculous process, this diagnosis was improbable. Exploratory needling of the chest might have cleared up the difficulty of diagnosis, but this is a case in point where this practice should be withheld *at least* until a radiographic examination has been made. In our case, especially, it was hardly justifiable in view of the graver possibilities which had to be borne in mind.

The initial radiographic examination (Jan. 28th, 1932) showed a definite lesion occupying the greater part of the right hemithorax (Fig. 1). There are various interesting features to be noted: (*a*) the increase in size of the right hemithorax, which may partly account for the lack of displacement of the thoracic viscera; (*b*) the defined lower and internal border; (*c*) the gradual shading into general haziness of the upper and outer border; and (*d*) the pronounced peak of the diaphragm on the right side. The condition was now considered to be non-tuberculous, and in spite of obvious difficulties a tentative diagnosis of pulmonary hydatid cyst was made on the radiographic appearances.

At first there was a complete denial of the child having associated with a dog at any period of her life, but later we were able to obtain a history that four years previously she had a wire-haired fox terrier which was bought from a stables. The dog had been ailing for two months and eventually was drowned. The child made a playmate of the dog and fondled it a great deal.

The next radiograms (April 25th, 1932) showed some bulging of the upper part of the right hemithorax. The trachea and heart were slightly displaced to the left. The lesion showed an increase in size downwards towards the diaphragm (Figs. 2 and 3). The two following radiograms—extending over a period of 12 months—showed what appeared to be improvement from a radiological standpoint. The lesion had contracted and now occupied the upper half of the right lung field. There was no cardiac displacement. The final radiogram (Fig. 6), taken on March 5th, 1934, showed evidence of fibrosis in the upper and inner part of the right lung. The trachea and heart are drawn over to the right. In the lower part of the lung field there are appearances suggesting peripneumonitis. Stereoscopic radiography suggested evidence of a localised atelectasis in the upper, inner, and anterior part of the right lung.



FIGS. 4 and 5.—Radiograms (taken at an interval of three months) showing contraction of the lesion in the right lung. There is evidence of fibrosis, and the mediastinum is slightly drawn over to the right.

FIG. 6.—Radiographic appearance after spontaneous rupture of the cyst.

CASE RECORD

The patient was a schoolgirl, aged 8 years, and the only child. She was first seen at her home in October, 1931, at the request of the medical attendant, who suspected her of having pulmonary tuberculosis. Both her parents are alive and healthy, and there is no tuberculosis in the family. Her only previous illness was whooping-cough, from which she made a good recovery.

Present illness.—She was last quite well at the beginning of March, 1931. The first symptoms noticed were lassitude, listlessness, anorexia, and night sweats. At that period she was home from school for two weeks. She then remained fairly well until October of that year when she developed a somewhat similar attack, lassitude, anorexia, and night sweats being the predominant symptoms. There was a slight cough and scanty expectoration and ? loss of weight. She was kept in bed for three weeks. No record of the temperature was available, and no cause could be assigned to the symptoms.

Examination (Oct. 8th, 1931) at home. The general nutrition was good. The skin was normal in colour, but the mucous membranes showed some slight degree of anæmia. There were no scars or rashes present, no œdema, no incurving or ridging of the nails, and no clubbing of the fingers. No evidence of dyspnœa or cyanosis was noted, and the pulse-respiration ratio was normal. Throughout our entire observation of the case we were unable to get a specimen of sputum for examination, although this was said to be present but scanty.

The chest was well covered. There appeared to be some fullness over the whole of the right side, where movement and expansion were definitely restricted. The veins showed some prominence over the upper part of the chest wall, especially on the right side. No definite displacement of the cardiac impulse was noted. Palpation confirmed inspection. There was no rhonchal or friction fremitus present and no cardiac displacement. The percussion note was dull over the right upper lobe with some slight resistance. The area of cardiac dullness was not increased. Breath sounds were absent over the right upper lobe. Nothing abnormal was detected elsewhere in the body.

A Pirquet tuberculin test was done and this gave no reaction. It was repeated subsequently on April 28th, 1932, again with a negative result. The child was excluded from school and seen at frequent intervals up to last April.

Résumé of clinical notes.—Oct. 12th, 1931: physical signs more marked in right lung; dullness increased; coarse crepitations in right paravertebral area. April 25th, 1932: patient complained of dyspnœa on least exertion; heart slightly over to the left, otherwise no marked change in physical signs; note increase in size of lesion on radiogram (Fig. 2). July 28th, 1932: gaining weight; previous day patient had a hæmoptysis accompanied by much purulent expectoration; no systemic disturbance noted. Oct. 27th, 1932: intense bronchial breath sounds over right upper zone; pleural friction in basal region; no cardiac displacement; contraction of lesion in radiogram—apparently after partial evacuation of cyst on July 28th. Sept. 18th, 1933: still gaining weight; no marked change noted in physical signs in intervening period.

On Nov. 25th, 1933, the patient was admitted to hospital because a week previously she had been taken ill with repeated bouts of coughing. Temperature 102° F. During this time, on three occasions, she coughed up "pieces of skin," accompanied by much foul sputum. With these attacks she became very dyspnœic. She was admitted to hospital as an emergency case, and on the following morning she developed another bout of coughing and expectorated some material which was later identified as the wall of a hydatid cyst. Pus cells and bacteria were present, but no hooklets were found. During the next few days she became gravely ill, presenting symptoms of marked cardiac and respiratory embarrassment and developing an urticarial rash. Symptomatic treatment was adopted and the temperature settled to within normal limits on the sixth day after admission. Thence she made an uninterrupted recovery and was discharged on Dec. 14th, 1933.

Special investigations.—A differential white cell blood count showed percentages which were within normal limits. There was *no* eosinophilia. A Casoni intradermal test with two antigens was negative.

Recent history.—March 5th, 1934: continued gain in weight. Slight dry cough. General condition good. Slight restriction of expansion with impaired resonance over the right upper zone. Bronchial breath sounds in infraclavicular region. Pleural friction in mid-zone. Marked whispering pectoriloquy along upper dorsal spine. March 19th: no symptoms. Pleural friction disappeared, otherwise physical signs in statu quo. April 5th: patient fit and well—attending school. No symptoms. Physical signs in statu quo.

CONCLUSION

Despite the advances made in thoracic surgery during recent years, the removal of pulmonary cysts must still be fraught with grave risks and the operative mortality in children is high (15 per cent.). Spontaneous rupture is not free from danger either; immediate death from suffocation may occur or death may result from an acute intoxication of an anaphylactic nature. With reservations, the dictum of Trousseau must still be accepted—viz., "Generally speaking, the wisest course is to refrain from interference and be a watchful observer of nature's methods."

I should like to record my thanks to Dr. H. M. Williams, tuberculosis physician for Swansea, for his permission to publish this case; to Dr. W. Macdonald, hon. physician to the Swansea General Hospital, for permission to follow up the case while under his care in hospital; and to Dr. A. F. Sladden, pathologist to the hospital, for his reports on the laboratory findings.

REFERENCES

1. Abt's Pediatrics, 1926, vol. viii., p. 990.
2. Ortenberg, S.: Canad. Med. Assoc. Jour., 1929, xx., 284.
3. Green, A. S.: Brit. Jour. Radiol., 1930, iii., 453.
4. Morquio, L.: Arch. de méd. des enfants, 1926, xxix., 5; Abstr., Jour. Amer. Med. Assoc., 1926, lxxxvi., 986.

LITERATURE

Beretervide, E. A., and Mindlin, S.: Prensa méd. argent., 1933, xx., 872.
Grenet, H., Isaac-Georges, P., and Louvet, L.: Bull. Soc. de pédiat. de Paris, 1932, xxx., 536.
Escardo y Anaya, V.: Bol. Soc. cubana de pediat., 1932, iv., 13.
Fiorentini, A.: Policlinico, 1931, xxxviii., 222.
Toppo, U.: Pediatria, 1930, xxxviii., 1066.
Reme, G.: Deut. med. Woch., 1927, liii., 324.
Gatti, G.: Morgagni, 1924, lxvi., 69.
Archangelsky, W. G.: Arch. f. Kinderheilk., 1911, lv., 382.
Labbe, R.: Bull. Soc. de pédiat. de Paris, 1909, xi., 191.
Ferrand, M., and Lemaire, J.: Bull. et mém. Soc. anat. de Paris, 1908, lxxxiv., 450.

Clinical and Laboratory Notes

EMPYEMA NECESSITATIS ASSOCIATED WITH PARAPLEGIA

By C. Allan Birch, M.D. Liverp., M.R.C.P. Lond.

LATE SENIOR MEDICAL REGISTRAR, ROYAL INFIRMARY, LIVERPOOL; DOROTHY TEMPLE CROSS TRAVELLING FELLOW

Many cases have been reported in which an empyema has ruptured spontaneously and the pus has pointed in unusual situations. The following case is recorded because of the possibility of direct causal relationship between thoracic empyema and true suppurative myelitis. Opportunities for detailed investigation before and after death were limited, but the known facts make an interesting story.

A. B., an unmarried girl aged 18, had no previous illnesses beyond scarlatina as a child and tonsillectomy at 13. She became ill with pain in the back and shivering and was thought to have influenza. Three days later her legs became weak, and on the fourth day she had a

complete flaccid paraplegia with anæsthesia to cotton-wool touch and pin-prick, extending up to the middle of the thighs. She was incontinent of urine and fæces. She had no cough or sputum throughout her illness, and no dyspnœa, cyanosis, or chest pain.

The temperature was intermittent (102–104° F.) from the onset of the illness. She had no rigors. A certain amount of deep sensation returned in the legs, but anæsthesia to pin-prick extended as high as the middle of the sternum.

A few investigations were made early in the illness. A blood count showed 26,186 leucocytes per c.mm., of which 86 per cent. were polymorphs. Radiography of the spine (with a small portable machine) showed no apparent change. The Wassermann reaction was negative. She had a slight vaginal discharge, but no gonococci were present in it. At this time the urine was normal, but later she developed an acute cystitis. Physical examination was otherwise negative. A diagnosis of transverse myelitis of unknown ætiology was made. During the first four days of her illness three observers found no signs of disease in the lungs. When next seen by me two weeks later she was moribund and was not examined.

At autopsy the right pleural cavity contained about three pints of foul pus. The base of the right lung showed a small patch of consolidation and much fibrinous pleurisy. There was a patch of consolidation in the apex of the left lower lobe. The erectores spinæ were infiltrated with pus and there was a large abscess outside the vertebræ which communicated with a diffuse trough of pus in the spinal canal and in which the spinal cord could hardly be distinguished. Above the level of the seventh cervical vertebra the spinal cord was normal and the brain was normal. No localised disease of the vertebræ could be found.

There are three possibilities to be considered in this case: (1) that the initial lesion was a myelitis of unknown nature which was later complicated by a pneumonia and an empyema which invaded the spinal canal; (2) that the initial lesion was in the right chest and the paraplegia resulted from it by direct extension of pus; (3) that the lung and cord lesions arose simultaneously as part of a septicæmia.

The fact that the patient had no symptoms or signs referable to the chest at the onset is a point, admittedly not a strong one, in favour of a primary myelitis. The high initial temperature and the condition found at autopsy are in favour of an initial lesion in the lung. Blood cultures were not made. Whatever be the true order of events in this case the fact that an empyema may track into the spinal canal is shown.

A CASE OF MULTIPLE ANEURYSMS

By A. G. Sanders, M.B. Lond.

LATE SENIOR HOUSE PHYSICIAN, THE METROPOLITAN HOSPITAL, LONDON

THE following case of multiple syphilitic aneurysms is sufficiently unusual to be recorded.

The patient, a Jewish woman aged 63 years, was admitted to the Metropolitan Hospital under the care of Dr. C. Worster-Drought in March, 1933, for cough and shortness of breath.

Family history.—Her husband is under treatment for neurosyphilis of the meningo-vascular type. He is now aged 61 years and was first seen in March, 1925, with a history that in February, 1924, he had a "stroke," remaining more or less unconscious for 14 days. He gave a history of specific disease 30 years before which was inadequately treated. On examination he showed right pupil greater than left, both reacting sluggishly to light and normally to accommodation; slight weakness of lower half of the left side of face; spastic condition of both left arm and left leg, left arm showing limited movement at shoulder and elbow but none at wrist and fingers. Left leg showed limited movement at all joints. All left arm-jerks greater than right; knee- and ankle-jerks brisk, left greater than right; left plantar extensor, right flexor; left abdominal reflexes absent. Gait that of spastic left-sided hemiplegia. Heart not enlarged, sounds normal, pulse 84, regular. Blood-vessels somewhat thickened. Blood pressure 140/83. Blood Wassermann reaction strongly positive. Cerebro-spinal fluid: 10 cells per c.mm., small lymphocytes with an occasional plasma cell; protein 0·045 per cent.; globulin faint trace; Wassermann reaction positive; Lange curve 1 2 2 3 3 2 1 0 0.

He was treated with periodical courses of Novarseno-billon and bismuth injections as well as iodides by the mouth and improved considerably. The movements in the left hand and at the left wrist returned; at the present time the arm shows only slight spasticity and he uses it well. Similarly, the left leg shows good movement and is only slightly spastic. The last cerebro-spinal fluid examination carried out in November, 1930, showed only 5 small lymphocytes per c.mm., total protein 0·03 per cent., globulin and Wassermann reactions negative, and Lange reaction 2 2 2 1 1 0 0 0 0 0. Blood Wassermann reaction weakly positive. He remains well and is able to carry on his work as a small shop-keeper.

The only child is a daughter aged 49 years who shows no signs of syphilis and has two healthy children.

Previous history.—The patient had one miscarriage six years after her daughter was born—i.e., 36 years ago. She has never had any rashes or other secondary manifestations. Myomectomy 22 years ago.

History of present illness.—For one year the patient has not been able to bend down nor bend her head far forward as these movements brought on a "choking feeling" in the upper part of the chest. For about six months she has only been able to sip fluids as a large draught also brought on the same feeling. For three months she has become progressively short of breath, especially on exertion, while for two months she has had a harsh cough which increased the dyspnœa and also caused occasional cyanosis. She could not lie down without distress.

Present condition.—She has an occasional brassy cough with voice husky. On the right side of the neck a pulsating swelling can be seen, about the size of half an orange, and a smaller swelling on the left side. On palpation the first is found to be an aneurysm, presumably of the right common carotid artery involving its bifurcation, while the second is the left common carotid dilated to about ¾ in. diameter. The left subclavian artery is dilated and tortuous. There is a fusiform enlargement of the brachial artery at the bend of the right elbow, while the left brachial artery appears to be larger and more readily palpable than normally. No other aneurysms are found in the limbs. There is no "tracheal tug." The heart is dilated and the apex-beat felt in the fifth left interspace 3 in. from the sternal edge. The cardiac dullness extends upwards to the second space on the left side and ½ in. to the right side of the sternum in the second and third spaces. Auscultation reveals a soft, localised, systolic murmur at the apex. The aortic second sound is much accentuated, but there are no murmurs at the base of the heart nor can any be heard over the aneurysms in the neck and elsewhere. The pulses appear equal. B.P.: left 220/120; right 210/134. The lungs show mild general bronchitis. Abdomen normal. The pupils are irregular and inactive to light but react to accommodation. The tendon reflexes are all present but the knee-jerks are sluggish. Plantar responses flexor. The vocal cords and larynx are normal. The blood gives a "two-plus" Wassermann reaction and a positive Sigma test of 1·9 units.

The cerebro-spinal fluid is normal in all respects with negative W.R. The urine shows no abnormality. An X ray examination of the chest shows the following: "*Heart:* general enlargement. *Aorta:* arch is enlarged and displaced upwards and to the left. Descending aorta is also enlarged. Plaques seen in walls of arch. Diagnosis: aortitis ? atheromatous."

With several weeks rest in bed the patient improved sufficiently to return home where she has since been fairly well.

I am indebted to Dr. C. Worster-Drought for kindly allowing me to record this case and also for the notes of the husband's condition.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTIONS OF OTOLOGY AND LARYNGOLOGY

THE summer meetings of these sections took place at the University of Birmingham on June 8th and 9th.

The President of the section of otology, Mr. W. J. HARRISON, was in the chair at the first session when Sir CHARLES BALLANCE read a paper on

Nerve Anastomosis

illustrated by slides and cinematograph films. He said that the earliest experiments on the suture of nerves were those of Fleurens, and that since 1895 surgeons had been uniting the peripheral end of a divided nerve to the central end of some other divided nerve of the neck. The recovery of the muscles of the face after such an operation, though often remarkably satisfactory in comparison with the preceding paralysis, was at no time functionally perfect. At the conclusion of the war he determined to try to ascertain, by the experimental method, the best procedure in operating for facial palsy. With this object, thirty experiments were carried out, in which the facial nerve was united to various nerves in the neck. At the end of six months the voluntary movement and the faradic response were normal in several of the animals, and the muscles on both sides of the face contracted together. But when the facial nerve was grafted to the hypoglossal, the descending hypoglossi, or the glosso-pharyngeal nerve, associated movements, varying from slight closure of the eyelids to contractions involving other muscles of the face and pinna, were present. Four years ago Dr. Arthur Duel, of New York, invited Sir Charles to join him in conducting surgical research and there they took up the question of the operative treatment of facial palsy. The decision to employ a nerve graft in the Fallopian canal was evolved after nearly a year of experimentation, the animals used being monkeys. There was, he said, no such thing as anastomosis of nerves. The distal segment of the nerve degenerated, and at the end of fourteen days it could be described as a bundle of tubes containing the broken-down fatty elements of the nerve sheath. The decision to perform an intertemporal operation for the cure of facial palsy was strengthened by the recognition that an injured nerve should be exposed at the site of the injury. In man, the complete or radical mastoid operation should be done before the outer wall of the aqueduct was removed. Decompression was the obvious course to adopt. In many cases it was best to expose the nerve from the geniculate ganglion to the stylomastoid foramen. A long graft was needed to fill up the gap. Neither the speaker nor Dr. Duel favoured an operation which aimed at shortening the course of the nerve by displacing it from the canal.

Expression of the emotions was, he continued, the best test in assessing whether the operation had been followed by the harmonious working of the two sides of the face. Dr. Duel was responsible for the use of degenerated grafts instead of fresh grafts, and he demonstrated their surgical value. The degenerated grafts consisted of a series of tubes filled with fatty masses due to the breaking up of the sheaths; through these tunnels the axis cylinders slid along with great facility. The use of this graft might determine the return of faradic excitability in the muscles of the palsied face in as short a period as a month. In 13 of the first series of 22 experiments on baboons, spontaneous contractions of the face muscles were observed, and in 8 of the 13 the facial nerve had been grafted to another nerve of the neck; in the remaining 5 the nerve graft operation had been done. Anæsthesia was noted to cut out the control of the neopallium. If the cerebrum was removed by section of the crura cerebri, the spasms of the facial muscles became still more exaggerated; the monkey continued to breathe, and lived on its brain stem. Neither Dr. Duel nor Sir Charles had observed, after operations on patients for facial paralysis, any spasm of the muscles, showing that in this respect the monkey differed from man.

Sir HAROLD GILLIES related his

Experiences with Fascia Lata Grafts

He said that the value of the support given by the fascia lata was comparable to that of the cock-up splint. It was essentially a palliative operation, but its use had been established, and in cases promising to recover it was a great aid in promoting recovery. There were two main methods of taking the graft: the open and the closed. In the first, a long incision was made down the thigh; in the second, a nick was made and a ring cutter inserted and a portion of graft removed. The usual positions for placing these strips of fascia lata were the centre of the lower lip, centre of upper lip, and the angle of the mouth. For paralysed eyelids he considered that the use of a temporal muscle slip *plus* its own temporal muscle fascia was best. Despite every care in asepsis, mild infection occurred in quite a considerable proportion of the cases; that was especially so if the graft perforated the mucous membrane. Sir Harold favoured the closed method, and by means of a cinematograph film he demonstrated the operation.

The subject was discussed by the PRESIDENT, Mr. LIONEL COLLEDGE, Mr. E. WATSON-WILLIAMS, Mr. HAMBLEN THOMAS, Mr. SYDNEY SCOTT, Mr. THACKER NEVILLE, Dr. DOUGLAS GUTHRIE, and Mr. HOLT DIGGLE.

Phonation and Articulation

Mr. STEPHEN JONES read a paper on Normal Phonation and Articulation, illustrated by diagrams, and Mr. V. E. NEGUS contributed one on Disorders of Phonation. He showed that it was necessary that the margins of the glottis should be even, otherwise a complete shutting off of the air current would not occur. Growths or ulcerations at the margins produced superimposed tones or noise. In the raising of pitch the contraction of the thyro-arytenoid muscle was increased; it was these muscles which imparted elasticity to the margins of the glottis. A high-pitch note was always more difficult to sustain than a low one. He maintained that the vocal cord was unnecessary for phonation. The use of the other muscles was to hold the scaffolding of the larynx in correct position during phonation. Laryngitis or laryngeal ulceration was responsible for extra puffs of air, with a resultant harsh quality of voice. He illustrated the comparative anatomy of the organs of phonation by a series of slides.

Miss FREDA PARSONS, who is in charge of the Phonetics Clinic at Queen's Hospital, and is concerned with re-education of the organs of speech and the mouth after operations, described her methods. Her main object was to instil into the patient a conception of the high function of speech, and to use every

device to cause him or her—and most of her pupils were children—to feel a real joy in learning to talk distinctly. This was especially necessary, as people who were dumb and had serious speech defects were very depressed. If speech was impossible or difficult the personality became imprisoned, and, since speech was the chief means of social intercourse, failure of this function inevitably induced a feeling of inferiority. She taught her subjects to increase the flexibility of their speech organs, and the value of voiceless stops and voiceless continuance. If the tones were adequately taught, she found that the vowels fell into shape normally. For that reason she devoted special attention to the consonants. Every few days she devised some new means of sustaining the patients' interest and excitement. Miss Parsons demonstrated, in a number of children and one woman aged 56, the means by which she re-educated the speech capacity; in all the articulation was such as to form a model for some normal people. Before the exercises the woman, who had had a two-stage operation on the mouth, was unable to use the telephone; she did not fail in any of the requirements of her life.

Mr. BRAYSHAW GILHESPY remarked that the pitch of consonants was mainly in the region of 8192 double vibrations per second, or tuning fork C_6, and that the vowel sounds were situated lower in the scale—namely, between 400 and 2000 double vibrations per second. If the hearing below 2000 double vibrations was lost, there resulted great confusion in distinguishing certain vowels, apart from difficulty in hearing them, as certain pairs of the vowels had fundamental notes so close together that differences in frequencies could not be appreciated unless one of the pair possessed an overtone by which it could be recognised. People with nerve deafness failed in reference to their consonants. In conclusion, he remarked how little was taught of phonetics in standard text-books on ear and throat work.

Dr. T. C. GRAVES (Birmingham) read a communication, supported by two cases, on

Sphenoidal Sinus Infection in Relation to Mental Disorder

He showed that when mania arose from the existence of closed foci of sepsis the ordinary sedative drugs failed to remove the excitement. Both the patients had serious circulatory disturbance, which rendered the subjects unfavourable risks. The first patient, a woman aged 25, was certified, for the first time, in April, 1933, and was discharged in the following November, since when her recovery had been maintained. She had had nasal catarrh, and, later, cacosmia and cacogeusia; also headaches and soreness in the right temporo-parietal region, and the frontal at times. There was a history of two nervous breakdowns. She lost weight, developed faulty habits, was violent, and had severe general asthenia. Pus was found in the right sphenoid and left antrum, and was drained. Both ethmoids were hæmorrhagic. Septic tonsils were removed, and injections of colloidal sulphur were given. Improvement followed these measures, and she began to get well.

The other case was that of a woman aged 41, who was admitted to the mental hospital in August, 1929, and was not discharged until April, 1934. There was a history of familial chronic nasal and conjunctival sepsis, and she had frequent severe headaches and influenza. There were five normal pregnancies, and during the sixth she had an enlarged thyroid, and tremulousness, with cyanosis and vertigo. Periods of confusion and anger alternated with sleepiness. On admission she was grossly obese, and her tonsils were septic; also she had purulent conjunctivitis and blepharitis. Blood Wassermann was negative. There was evidence of sinus and tonsillar disease. Her menstrual function was profuse. Her mental state seemed to be secondary dementia with hallucinations and excitement. Examination showed infection of both sphenoids, yielding *B. influenzæ*, and the sinuses were drained intranasally. Following this there was mental improvement, and sedative drugs were no longer needed.

Mr. HAROLD ROUND demonstrated in a number of patients a remarkable dexterity and ingenuity in rectifying severe facial deformity following operation, and after removal of long-standing facial lupus.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

A MEETING of this society was held at Leeds on May, 11th, with Prof. DANIEL DOUGAL (Manchester), the president, in the chair.

Puerperal Fever and Peritonitis

Mr. D. W. CURRIE read a report on a hospital epidemic of puerperal fever which lasted from the end of February to the middle of March, and was due to a hæmolytic streptococcus. Ten women were affected and four died. In comment on his investigation, Mr. Currie pointed out that the hospital had been over-full for several days, the average daily in-patients being about 120 for 108 beds. The number of patients in the labour department varied from 9 to 15 for 10 beds.

Three patients were in the labour department over three days, and were frequently moved from the first-stage ward to the labour ward and back; although the linen was changed at each move, it is possible that a septic patient soiled more than one bed. This danger is obviously liable to occur in a large central labour ward such as the one involved, which has six beds.

One definitely septic patient was moved after delivery to a clean lying-in ward. She should have been sent to the isolation block, or at any rate to a side ward.

There was often delay in transferring feverish patients from the large lying-in wards to the side wards. This was due to the difficulty of managing the beds owing to overcrowding, but probably explains the infection of the two last patients.

He deprecated the practice of admitting "failed forceps" and other probably infected cases into the labour ward with clean cases. He also stated that the blankets and bed-pans had come under suspicion as possible vehicles of contagion.

Mr. Currie then gave a brief account of 17 cases of puerperal peritonitis operated on by him in the last four years. Clinically they were divisible into three groups—peritonitis following abortion, atypical peritonitis early in the puerperium, and typical peritonitis late in the puerperium. In the atypical group there were nine cases with one recovery. The most constant signs were distension and free fluid; others were a sudden rise in temperature and pulse-rate, slight superficial tenderness, and diarrhœa. The treatment in each case was laparotomy and drainage. Until lately a tube had been left in the pouch of Douglas and removed after three days, but the drainage was slight. Latterly, therefore, the tube had been inserted just into the cavity and left for a week; and in the successful case thin serous fluid drained for three or four days, then changing to thick pus. Another patient had her operation on the third day, after

complaining of severe abdominal pain. She had typical signs of appendicitis with peritonitis, and the appendix was gangrenous: she recovered. Three cases late in the puerperium had signs typical of peritonitis; all three had local abscesses and recovered after drainage. Four cases were post abortum. This class was less dangerous because the infection tended to be limited to the pelvis. Two were drained by posterior colpotomy, and recovered; two died after abdominal drainage.

Endometriosis and Ovarian Dysfunction

Dr. T. N. A. JEFFCOATE (Liverpool) read a paper in which he said that endometriosis is a state in which there is excessive formation of endometrial tissue in the body, comparable in all respects with overgrowth of the uterine mucosa. As it was established that endometrial hyperplasia is due to the action of œstrin, and the condition had been produced experimentally in castrated women and animals, he thought it logical to conclude that excessive œstrin secretion was the most important factor in the growth of endometrioma in any site. He had made a clinical and pathological study of 111 patients with endometriosis, to determine in each case the presence or absence of the forms of ovarian dysfunction characterised by excessive secretion of œstrin—namely, metropathia hæmorrhagica, hyperfollicular disorder, and granulosa-cell tumour. The results were as follows:—

Endometrioma of the uterine wall alone (33 cases).—The average age of the patients was 45·5; the youngest was 30 and the oldest 57. Most of the patients were sterile (over half of the married) or had not conceived for some years before operation. The commonest symptom was excessive loss, and as a rule this was of the type occurring in metropathia—i.e., metrostaxis, often preceded by amenorrhœa. A part of one or both ovaries was examined in 7 cases. One or more follicular cysts were present in 4 patients; in a fifth a degenerating corpus luteum was present on the ninth day of the cycle, which strongly suggests hyperfollicular disorder. Recent lutein tissue was not seen in any other case. The uterine mucosa was examined microscopically in 19 cases (including 5 of the specimens reported on naked eye), and in 18 specimens the features of hyperplasia were present and the appearance of the resting stage was constant except that in two cases the stroma was œdematous. In the endometriomata themselves all the characteristics of hyperplasia were found in 29 specimens out of 34. It is submitted that the frequent finding of all features of hyperplasia in the endometrioma, with similar changes in the uterine mucosa, can only be caused by the influence which determines the latter—namely, œstrin. The time of the operation in relation to the date of the last period was noted in all cases. At least 21 should have shown premenstrual or menstrual features in the uterine mucosa, or the tumour, or both, but the secretory phase was present in two specimens only (both mucosa and endometrioma of one case). The evidence appears conclusive that most of the patients were suffering from a disease analogous to metropathia, while 2 certainly, and probably 5, had hyperfollicular disorder.

Extra-uterine endometriomata (78 cases).—Of these patients 46 showed no uterine involvement. The average age was 38·4: the youngest was 21 and the oldest 53. The age-incidence corresponds to that of hyperfollicular disorder rather than that of metropathia. Nearly half of the married were sterile, and of the parous many had long periods of sterility before operation. The commonest symptom was excessive bleeding (51 patients, in 27 of whom the lesion was entirely extra-uterine): 22 had metrostaxis, often preceded by amenorrhœa; 16 had menorrhagia, and 13 epimenorrhœa or epimenorrhagia. This, especially in the absence of uterine endometriosis, is striking. The appearance of the ovaries was not discoverable in 12 cases. Follicular cysts, often multiple, were present in one or both ovaries in 29 of the 67 specimens. These cysts were unaccompanied by recent lutein tissue, save in one instance in which the ovaries were removed from a patient with epimenorrhagia. The uterine mucosa was examined microscopically in 30 cases, and 28 showed hyperplasia and adenomyosis. In 8 cases the stroma was œdematous, possibly indicating hyperfollicular disorder. The large number presenting œdema of the stroma corresponds with the lower age-incidence in this group, and also with the higher incidence of epimenorrhagia. Of 79 specimens, 67 showed all the criteria of endometrial hyperplasia, though there was slight œdema of the stroma in 27. In the other 12 the small amount of distortion of the endometrial elements made it impossible to determine the presence or absence of hyperplastic features. The time of the operation in relation to the date of the last period was noted in all cases; at least 37 specimens should have shown menstrual, premenstrual, or post-menstrual changes in the tissue of the mucosa or of the endometrioma; these features were only found in 2 cases.

In both groups Dr. Jeffcoate considered it had been shown that endometriomata are always associated with ovarian dysfunction. Endometriosis occurred at the age at which dysfunction is common, and the associated sterility could be attributed to absence of ovulation. The histological findings in uterus, ovaries, and tumour, fitted in exactly with the theory of the ætiology he had advanced. The occurrence of fibromyomata with or without endometriomata was probably, he thought, due to the same factor. Clinically these tumours appeared at the same age-period as ovarian dysfunction, and were accompanied by the same symptoms—menorrhagia and sterility. Pathologically, specimens containing fibromyomata always showed evidence of ovarian disorder, such as follicular cysts and endometrial hyperplasia.

In conclusion, Dr. Jeffcoate maintained that his view of endometriosis explained better than any other the symptoms and pathology of the disease. It accounted for the recurrence of these tumours in patients who had had conservative operations, and explained why they did not develop when castration by operation or radiation has been performed. He added that although the ovarian disorder had been regarded for purposes of convenience as primary—that is, in relation to the pelvic lesions—the cause of the alteration in behaviour of the ovaries lay almost certainly in the pituitary gland.

Mr. A. GOUGH described a case of menstruation starting at the age of 29, and showed specimens of a syncephalus thoracopagus (subgroup diprosopus diophthalmus) and of a cervical fibroid obstructing labour.—Dr. E. A. GERRARD read a communication on dystocia due to rigid cervix following colporrhaphy.

EDINBURGH OBSTETRICAL SOCIETY

A MEETING of this society was held on May 9th, with Dr. OLIPHANT NICHOLSON, the president, in the chair.

Cæsarean Section

Dr. W. F. T. HAULTAIN, with Dr. E. M. ROBERTSON and Dr. J. B. DEWAR, contributed a study of 463 cases of Cæsarean section with special reference to the late results in 174 cases, particulars of which were obtained by writing to all the patients who had the operation at the Royal Maternity Hospital, Edinburgh, during the years 1925–31. It was found that the general health of the mother was usually excellent in the years after the operation. About 11 per cent. stated that they were not in good health, but as a number of these women suffered from cardiac disease, this was not surprising. Only 15 per cent. suffered from any abnormality of the menstrual periods, and it was

interesting to note that amenorrhœa and scanty menstruation were as common as menorrhagia. Dysmenorrhœa was present in 7 per cent. of cases and was chiefly premenstrual in type. The most interesting result of the investigation, however, was the fact that in some 63 cases in which operation might have been followed by a pregnancy, no pregnancy resulted. It was difficult to account for this high sterility-rate. The fact that 14 patients were delivered naturally in the pregnancies following Cæsarean section showed that the old saying, "once a Cæsarean, always a Cæsarean," was by no means true in this series. Pain probably or possibly due to the operation was present in nearly 20 per cent. of the cases, but in only 8 per cent. was it sufficient to make the patient seek medical advice. Urinary symptoms were present in 13 per cent., the predominant complaints being frequency and painful micturition. Constipation was prevalent as a new symptom in 12 per cent. of the patients operated upon, and could be traced as a cause of pain in a number of those who complained of this symptom.

Vaginal Discharge of Non-infective Origin

Dr. R. CRUICKSHANK and Dr. A. SHARMAN (Glasgow) pointed out that an excessive discharge per vaginam might arise from any one of three sources—vagina, cervix, or uterus.

The tubular glands of the endometrium were the source of a small quantity of watery and highly alkaline secretion from the normal uterus. The secretion from the racemose glands of the cervix was thick, mucoid, normally small in amount, and definitely alkaline, the pH ranging from 8·0 to 9·0. The normal vaginal secretion—not a true secretion since there were no glands in the vaginal epithelium—was white, cheesy, highly acid in reaction and consisted of epithelial squames, Döderlein's vaginal bacilli, some transudate and lactic acid. The lactic acid, which was responsible for the high acidity, resulted from the breaking-down of glycogen in the vaginal epithelial cells, probably by bacterial action. These conditions were found in the vagina during reproductive life and for a short period after birth when glycogen was also present in the vagina. The deposition of glycogen there was probably controlled by the œstrogenic hormone.

By laboratory examination it had been possible to classify a series of over 40 cases of virginal leucorrhœa into two categories—infective and non-infective. In the first the organism was usually *Trichomonas vaginalis*. Among the non-infective cases hormonal disturbance was often strongly suggested, either by the patient's "make-up" or by gross menstrual dysfunction. Spontaneous remission of the discharge tended to occur at intervals. The average age at onset was low (19 years). Sometimes the complaint dated from puberty and in three of the series excessive discharge was noted before menstruation had begun. In four out of five cases examined, excess of œstrin was present in the urine, while radiological examination showed an unusually small sella turcica in three of five cases. On vaginal examination no lesions, inflammatory or otherwise, were discovered. Excessive discharge of non-infective origin might occur in non-virginal patients and in pregnancy it was very common.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE ASSOCIATION.—We published an abbreviated report last week (p. 1231) of a discussion upon the Treatment of Peptic Ulcer which took place at a special meeting of the Fellowship on May 30th. It should have been mentioned that a verbatim of this report would appear in the issue dated June 12th of the *Post-Graduate Medical Journal*, the organ of the Fellowship of Medicine, a copy of which costs 2*s*.

INTERNATIONAL CONGRESS ON RHEUMATISM IN MOSCOW

MAY 3RD–7TH, 1934

(FROM A CORRESPONDENT)

DELEGATES from 26 countries represented at the recent IVth International Congress on Rheumatism in Moscow had every opportunity of judging for themselves the degree to which the modern U.S.S.R. is desirous of welcoming western medical ideas, and the stage to which she has herself progressed. With regard to the former, it would be difficult for them to have returned home without feeling that they had been welcome guests whose opinion had been sought and valued. The progress of medical science is difficult to assess during a stay of rather less than a month. Certain impressions were shared by a majority of those who attended the congress, and who took part in the subsequent tour of Southern Russia.

At the outset it is a little bewildering for representatives of "capitalistic" countries to find that public health under socialism includes the whole of medicine and surgery. "When a citizen falls ill from any cause, it is the duty of the State to do something, and to continue to do something until he is back at work in his original condition of health." This was said by a distinguished professor of medicine in the course of an address of welcome to the delegates. How far this ideal of state medicine has been put into practice it would be hard to say. It seems true of the highest grade workers in the large factories, but in the country districts, medical aid is probably hard to come by and far less highly organised.

In the large towns there is evidently no lack of doctors; in one hospital of 500 beds the medical staff numbered over 200. On the other hand, nurses seemed scanty; it was mentioned to us as one of the contributory causes of the predominance of women doctors that much of the more skilled nursing work, such as the giving of enemas, medicines, and feeding, falls upon the medical staff. Another is the comparatively poor pay received by the medical man. The social position of the medical profession has however risen since the revolution, at which time the doctor was classed as a category III. worker, and as such found it difficult to survive. At the present time he draws a monthly salary about equal to that of the average factory worker (but far below that of the skilled engineer), and this sum is raised by 20 per cent. after two years of satisfactory work, and thereafter up to a fixed maximum. He can retire on a 75 per cent. pension at the age of 55, but need not do so until 70. Every doctor must hold at least one post under the State; should he be ambitious, or require a double salary, he may hold two or even more such posts provided that he works in each for a minimum of six hours daily, and "does some scientific work in his spare time." During the last two years the medical man has earned the privilege of sending his children to the university, and of buying his food at the same price as does the worker.

The attitude of the majority of the medical men we spoke with was one of enthusiasm and hope for the future. It was pointed out that in former times there existed no plan for a system of public health, whilst during the last seventeen years an ambitious and idealistic plan embracing the whole scope of medical science has been worked out, and is partially in operation. It has naturally proved difficult for the older men to adapt themselves to the new régime, although in many cases they have done so with apparent success. Many are occupying chairs. They are however subject to political supervision by their juniors. In every hospital a "purge" is called for at periods of three years, when a joint meeting of the complete staff from senior physician to

furnace-men is held, and criticism of all from all is encouraged. Every action criticised must be defended. In Odessa, a radiologist to the State hospital had recently been dismissed for diagnosing a gastric ulcer in two cases, both of which died subsequently from other causes. The complainant was one of the nurses. The system is stimulating and probably healthy but offers opportunities of abuse.

Delegates to the congress had the unusual honour of an invitation to dine in the Kremlin as guests of Kalinin, the ex-peasant President of the U.S.S.R. This was no doubt in recognition of the fact that they represented the first international gathering held in Moscow since the beginning of the new régime. We were also received by Kuminski, the 34-year old Commissar for Health, who is a medical student. Sight-seeing tours and special performances at the opera were arranged in addition to the heavy programme of sanatorium and clinic visiting. The 6000 miles journey was made in a special train which was met everywhere by representative delegations from the ministries and medical societies. In Kiev, the new capital of the Ukraine, we were received in the magnificent new Academy of Sciences, whose President informed us that they now summarised their proceedings in English.

It was interesting to find the modern generation of medical men all over the country thinking but little of drug therapy. Physical medicine is acclaimed as the rational therapeutic procedure, and fine institutes for this purpose are erected in all towns. Due in part no doubt to the scarcity of drugs, there is a definite swing of opinion in this direction. Treatment and prophylaxis were emphasised everywhere as the aim of medicine; of diagnosis less was heard, and it may be that the length of the present medical course is insufficient to provide adequate training in diagnostic method. Much use is being made of the natural resources of the country; in the spas of the Caucasus, and in the Crimea and adjoining Black Sea riviera, countless sanatoria and rest-houses have been put up for all classes of worker. The army sanatorium, just completed at Sotchi by an American architect, is said, with little fear of contradiction, to be the finest in the world. It may be noted that everywhere the finest buildings are for the use of the army or the coming generation—kindergartens, creches, and schools. Great importance is attached to adequate holiday and rest periods for the workers in suitable surroundings as a preventive of disease; organisation of this kind has, it is said, reduced the incidence of chronic arthritis by one-third in the last ten years.

While it may be too soon to judge of the scientific accomplishments of the new Russian medicine the tour certainly revealed much of scientific interest, heightened no doubt by the new approach to familiar problems as a result of the break with more traditional schools of thought.

REVIEWS AND NOTICES OF BOOKS

The Medical Annual

A Year Book of Treatment and Practitioner's Index. Edited by H. LETHEBY TIDY, M.D., F.R.C.P., and A. RENDLE SHORT, M.D., F.R.C.S. Bristol: John Wright and Sons; London: Simpkin Marshall Ltd. 1934. Pp. 644. Illustrated. 20*s*.

IN the introduction to the 1934 volume the editors record an attempt to meet the criticism that this book is designed too much for the specialist and not enough for the general practitioner, and suggest with good reason that the family doctor will find useful material in the present issue. Dr. H. Letheby Tidy has succeeded the late Dr. Carey Coombs as medical editor. This year we have browsed chiefly among the medical entries, though those devoted to surgery and the specialties certainly deserve no less attention. Special interest attaches to the sections on anæmia and on dietetics, which are compiled with particularly sound judgment. Ketogenic diet was briefly mentioned in the 1933 volume, but the reference was too sketchy to be of any real value. Now more space is devoted to it under the headings of pyelocystitis and pyuria in children; a sample diet is given, also figures showing that satisfactory results have been obtained in a considerable number of cases. Recent work on vitamins is discussed in some detail, and this summary will be appreciated by those who try to keep pace with this rapidly growing subject. Due prominence is given to the successful transmission of influenza to ferrets, recorded in our columns a year ago. Alkalosis is discussed in connexion with the intensive alkali treatment of gastric and duodenal ulcers. When this form of treatment was first introduced much was written and spoken about the dangers of alkalosis; subsequently it was found that this complication was a relatively rare event. It is now a little disturbing to hear that of 200 cases treated in this way at St. Thomas's Hospital nine showed characteristic symptoms of alkalosis, and a detailed clinical picture is given. The great importance of its early recognition is clear from the fact that the symptoms are ignored, and alkalis are persisted with; the patient will die in coma, but if the treatment is stopped he rapidly recovers. The section on insomnia will be read with particular interest in view of the recent controversy over the uses and abuses of the barbitone derivatives.

The evergreen discussion on the significance of low voltage electrocardiograms is continued in this year's volume. Last year two investigators were reported as having come to the conclusion that low voltage electrocardiograms—i.e., 5 mm. or less—were of serious prognostic importance in a patient with heart disease. During the year other workers have published figures which limit the serious significance to low-voltage curves in lead II. or in all three leads, and emphasise the fact that no low-voltage curve is of great importance unless considered in conjunction with the clinical picture as a whole. An interesting report on the effects of age on the electrocardiogram should help to extend our knowledge of the variations from the so-called normal which can be safely neglected. Those interested in the study of stammering will find a long article on this subject explaining the basic difficulties of the stammerer and methods for circumventing them. The section on asthma records no outstanding advances during the year. The selection of the most significant among the very numerous contributions to the subject of rheumatic disorders must have been a difficult task; a helpful account is given of the International Rheumatic Congress held in Paris; also of the report of the Strangeways Collection, and of the report of the British Medical Association's committee. The article ends with an extensive bibliography.

In endocrinology the pituitary body has recently received much attention; an adequate account of our knowledge up to date is given, based chiefly on Cushing's work. A special article on National Health Insurance practice provides a historical summary and brief account of the present position of panel

practitioners which contains a mass of condensed information which should be very useful to those who are puzzled by the intricacies of the service to which they belong.

---

1. Modern Treatment in General Practice

Edited by CECIL P. G. WAKELEY, D.Sc., F.R.C.S., F.R.S.E., Editor of the *Medical Press and Circular*. London: The *Medical Press and Circular*. 1934. Pp. 426. 10*s*. 6*d*.

2. Treatment in General Practice

Second edition. By HARRY BECKMAN, M.D., Professor of Pharmacology at Marquette University School of Medicine, Milwaukee, Wisconsin. London: W. B. Saunders Company. 1934. Pp. 889. 45*s*.

1. THE 56 articles of which this volume is composed originally appeared in the *Medical Press and Circular*. A statement by the publishers that the articles are written for the general practitioner reveals the difficulty in which the editor has been placed in deciding what medical information is particularly needed by the general practitioner which is not needed by the whole medical profession. Most of the essays are useful compilations of accepted views, and the authoritative tone of many of them is justified by the positions of the writers. The publishers can fairly expect a large circulation for the volume in response to its modest price.

2. Though described as a book on treatment this is, in fact, a text-book of general medicine, including dermatology and obstetrics. Dr. Beckman's method, and a very effective one, is to preface each article on treatment with a short historical and clinical summary of the disease concerned. Throughout he contrives to be comprehensive without being tedious, and definite without being dogmatic. Moreover, he has an engaging trick, not overdone, of asking the reader questions without himself supplying the answers. Among many other interesting methods of treatment discussed are the use of normal beef-serum in the treatment of anthrax, and of glucose-insulin-antitoxin in diphtheria. There is a valuable note on the management of diphtheria carriers. Dr. Beckman believes that all children, from six months to six years, should be immunised against this disease. Talking of the "influenzal" group of disorders, which he lumps together under the comprehensive term "Catarrhal Fever," he has nothing but scorn for the doctor who sticks heroically to his post with influenza upon him. His advice is "Go home when you feel it!" "Glandular Fever" (in inverted commas) is given as a synonym for epidemic sore-throat; true glandular fever is considered separately. The convalescent serum and adult whole blood-serum treatment of measles is well described, and the author wonders if all medical students know how to support an inflamed scrotum in mumps—presumably a reference to the time-honoured use of an empty champagne bottle. For pain or restlessness in pneumonia he advocates the opiates, though some will dispute the wisdom of giving morphia, for example, except in the early stages of that disease. The treatment of rheumatic fever by cinchophens and other methods less well known than salicylates is fully described; also chorea by nirvanol. Dissuasion, says Dr. Beckman, is the best sedative in typhoid delirium. The account of the modern treatment of syphilis is, perhaps, one of the best things in the book; it is taught that repeated negative C.S.F. Wassermann reactions should be the only acceptable standard of cure. Some fourteen pages are devoted to methods of inducing anæsthesia in obstetrics. Some practical obstetricians will question the wisdom of deepening anæsthesia in non-instrumental deliveries at the moment when the head is crowning. This is essentially the time when, by conscious coöperation between patient and attendant, perineal tears can be avoided.

The book is racily written in good American, and though Dr. Beckman takes an almost sadistic pleasure in splitting infinitives, his lively humour makes this forgivable. The letter on page 28 should be framed and hung in every consulting-room or "office." There is abundant optimism in this book which all practitioners should possess. Appended is a vast bibliography and a table of vehicles and incompatibles.

Physics for Medical Students

A Supplementary Text-book. By J. S. ROGERS, B.A., M.Sc., F.Inst.P. Edited by T. H. LABY, F.R.S. Melbourne: Melbourne University Press. Pp. 205. 11*s*. 6*d*.

THIS attractive book may well make us wonder whether the medical student of to-morrow is going on in the same old way, learning his physics because he has to, or whether he is going to learn it with a definite idea that it will be of assistance to him in medical work. Mr. Rogers has called his work a supplementary text-book, and certainly the material with which it deals is still outside the scope of the premedical of most universities. The subject matter is well chosen, and in practically every branch of physics the author has taken up just those aspects which seem to weld into medical science. This brings us back to our starting point. As medical science enlarges its borders in ever-widening circles, will it still be possible for those trained for the general practice of medicine to acquire sufficient knowledge of the basic sciences to equip them to tread these outer regions, or will these have to be explored by others whose discipline has been deeper and less wide? In any case this book is of a type of which more will be needed in the future.

Aids to Sanitary Science and Law

Second edition. By C. F. WHITE, M.B., Ch.B., D.P.H., D.T.M., Medical Officer of Health, Port of London; and H. WILLOUGHBY, M.R.C.S., L.R.C.P., D.P.H., D.T.M. & H., Assistant Medical Officer, Port of London. London: Baillière, Tindall and Cox. 1934. Pp. 321. 4*s*. 6*d*.

THIS little book, published in 1926, has been revised with the object of bringing it up to date. It is intended to include in small compass the sort of information which may be useful, as a supplement to knowledge obtained from larger text-books, to those studying public health for the D.P.H., for a medical qualification, and for various other qualifications. It deals in 14 chapters with water-supply, air and ventilation, food, sewage and refuse disposal, sites and buildings, climate and meteorology, infection and disinfection, school hygiene, infant welfare, industrial disease and hygiene, tropical disease, parasites, vital statistics, and sanitary law. This is a wide field to cover in a book of this size and complete information cannot be expected. It would seem impossible, indeed, to deal with a subject like vital statistics in ten small pages, and the many inaccuracies and misleading statements in this chapter mar the book. The chapter on sanitary law, also, is not an

entirely successful attempt at compression, and space is wasted in description of procedure for repair, closure, and demolition of houses and the scheduling of insanitary areas according to the Housing Act, 1925, which were amended by the Act of 1930, some reference to which is made elsewhere. It is strange, too, to read in 1934 that the Vaccination Acts are (sic) administered by boards of guardians.

It is admittedly hard to know what should be selected from the wide province of sanitary science for those who are still students—even post-graduate students—but at least they ought to get nothing which is out of date and nothing which is not strictly accurate.

---

1. The Dermatergoses or Occupational Affections of the Skin

Fourth edition. By R. PROSSER WHITE, M.D., C.M. Edin., M.R.C.S. London: H. K. Lewis and Co., Ltd. 1934. Pp. 716. 35*s*.

2. The Common Diseases of the Skin

Second edition. By R. CRANSTON LOW, M.D., F.R.C.P., Consulting Physician to Skin Department, Royal Infirmary, Edinburgh. London and Edinburgh: Oliver and Boyd. 1934. Pp. 317. 12*s*. 6*d*.

1. THIS work has become the standard text-book on its subject in all English-speaking countries. Its author, an excellent portrait of whom faces his memoir in this edition, died in his eightieth year last January, content that he had created a lasting record of an increasingly important branch of medicine. A reduction in the size of the type has reduced the number of pages from 734 to 716, although a considerable amount of new material has been added, with 14 new illustrations and an amplification both of the general index and that devoted to authors' names. The amount of information contained is really monumental, and must be of the utmost value to factory surgeons, dermatologists, assessors, and referees, and in the complicated cases that are continually being fought and discussed both in and out of court under the Workmen's Compensation Act, 1906. The abundant references—as many as six or seven in a footnote to some pages—bear witness to the energy and industry applied by the author and by Miss Anne Newbold, who compiled the indices in their collection.

The general plan and the headings of the 12 chapters remain unchanged.

2. The author of this excellent little book on the common diseases of the skin has contributed much to our knowledge of the mechanism of cutaneous allergy. The chapter on eczema alone is worth the modest cost of the whole volume. In general arrangement it follows the classic outlines of the larger text-books, and the 18 chapters are apportioned with due regard to ætiology where this is certainly known, and to the ruling clinical features where it is doubtful or obscure. The illustrations and diagrams reach a high standard of reproduction. Interesting examples of the diagrammatic method are the small line-drawing depicting the author's theory of the histopathology of alopecia areata (p. 161) and the anatomical diagram of the common sites for the eruption of herpes zoster of the head and face. Those depicting histological structure display great skill in indicating all that it is necessary for a student or practitioner to know, and no more detail than is essential.

EUGENICS IN PRACTICE

A Series of Essays suggested by the Report of the Brock Committee

VI.—TECHNIQUE OF STERILISATION

THERE must be few, if any, surgeons in this country who have or would wish to have any large experience in operations performed to render procreation or conception impossible. Vasectomy may be performed as part of the operation of suprapubic prostatectomy, and salpingectomy when there is strong medical reason for preventing pregnancy. In both these cases the operation may be regarded as prophylactic, in the first place to prevent epididymitis, in the second to avoid the dangers of pregnancy or labour in special cases. These cases present no ethical problem to the surgeon; provided the operation is safe and effective the justification is clear. It is not quite the same, however, when the operation is to be performed in the interests of the community or of the race, rather than in the interests of the patient and for a definite therapeutic indication.

Apart from the legal aspect—which it is presumed will shortly be made clear—the surgeon may have a doubt in his mind whether the good of the community constitutes a sound ethical justification for such an operation according to the spirit, if not the letter, of the Hippocratic oath. Though compulsory sterilisation need not be considered, seeing that it has been condemned by the Brock Committee, the consent of a mentally defective person may not entirely remove his doubts. The committee has however made out a strong case for voluntary sterilisation in certain classes of mental defect, and it is probable that the majority of surgeons will be convinced by the evidence and conclusions set out in the report. This evidence was conclusive on the essential point that sterilising operations (vasectomy and salpingectomy) produce only the result desired and have no ill-effect on the health or sexual life of the individual. On one point the committee was unable to give a definite opinion—viz., whether vasectomy performed before the age of puberty would interfere with physical maturity—and for that reason they were not in favour of the operation being performed until maturity was reached. Since the report was published, however, animal experiments carried out by Mr. J. Hammond, F.R.S., at the School of Agriculture, Cambridge, have shown that ligature of the vas before sexual maturity does not interfere with physical or sexual development or capacity for sexual intercourse (see letter from Mr. C. J. Bond, Brit. Med. Jour., Feb. 3rd, p. 212).

It is not only in cases of mental deficiency that sterilisation may be required. In most instances in which the writer has had occasion to do these operations the indication has been blindness in men and women who wish to get married. The committee of the institution by which these people are employed and cared for believes that it is undesirable from every point of view that children should be born to blind parents, and it is on these persons, at their own request and that of the chairman of the institution, that most of the operations have been performed. Sometimes it is the man who wishes to undergo the operation, sometimes the woman. When one considers the miserable fate of a child born to such parents, doomed to be separated at once from its parents and likely (in some of the cases at least) to be blind, one feels that sterilisation in cases of this sort is reasonable and humane.

Vasectomy and salpingectomy are the methods

advocated by the Brock Committee, and no others need be considered. Castration, ovariotomy, and hysterectomy have disadvantages so obvious that they could rarely, if ever, be called for. Sterilisation in the female by means of X rays was considered and discussed in the Brock report and it was suggested that this method might occasionally be employed when, in the opinion of a psychiatrist, operation would have an unfavourable effect on the mental condition of the patient. One objection to X ray sterilisation is that, to be effective, a heavy dosage is required, which would probably (though perhaps not necessarily) completely destroy the functional activity of the ovaries and bring about an artificial menopause. Another is the risk of an ovum which has not received a fatal dose of radiation continuing to develop in a damaged form leading to defective or monstrous offspring.

VASECTOMY

This is satisfactorily performed under a local anæsthetic. The skin of the scrotum having been prepared in the usual way, the spermatic cord is taken up by the thumb, index and middle fingers of the left hand and the vas identified at the back of the cord and manipulated into a subcutaneous position. It is held there firmly with the skin stretched over it, while 1–2 c.cm. of 1 per cent. novocain is injected into the skin over the vas. It is convenient at this stage to fix the vas by a pair of light towel forceps (preferably with blunt points) below the point at which it is steadied by the fingers; the fingers should not be moved until the incision has been made. The vas is exposed by an incision about half an inch long and it is then secured by forceps or by passing a needle and catgut ligature under it. The fingers of the left hand may then be removed, and the vas ligatured above and below and divided between the ligatures. The wound is then closed. In most cases patients have been kept in bed for a day or two, though probably there is no necessity for this.

Vasectomy by this method is very simple and has the advantage over open dissection that there is less risk of injury to the spermatic vessels. It is generally advised that the incision should be as near to the external abdominal ring as possible; the important point is to choose a place at which the vas can be identified with certainty and held securely in a subcutaneous position while the incision is made.

As there is no definite evidence as to the duration of life of spermatozoa in the seminal vesicles, it is advisable, as suggested by Mr. Bond in his evidence before the committee, to forbid intercourse for a period of about three weeks after vasectomy.

SALPINGECTOMY

Simple ligature of the Fallopian tube is by no means an infallible way of preventing conception; even after ligature and division of the tubes cases have been reported where pregnancy has occurred. In fact it may be said that even after the most radical salpingectomy there is a remote possibility that an ovum may reach the uterus. However, for all practical purposes the usual method of performing the operation—as, for instance, after Cæsarean section—may be regarded as adequate. As this operation is only likely to be performed by gynæcologists or general surgeons of experience (as recommended in the report) it is hardly necessary here to go into details of technique. The writer's practice is to divide the tube about half an inch from the uterus, ligature the divided ends and to bury the proximal stump under the peritoneal covering of the uterus. A fold of the broad ligament may be stitched over the incision to obviate the possibility of a coil of bowel becoming adherent.

ASSURANCES TO THE PATIENT

If, as is here assumed, sterilisation is to be voluntary, it is desirable to go very carefully into the question both of efficiency and of possible risk. The Brock Committee inquired of a number of teaching hospitals in London and elsewhere, obtaining definite information from 22 places. Judging by the replies it seems quite clear that no prejudicial mental or physical effects have been known to follow double vasectomy; and the same is true of double salpingectomy, except that occasionally some regret may have been expressed for the loss of fertility. The Californian experience, as already noted, is equally definite on the point.

So much for the after-results. The operation itself may be regarded practically as free from risk in the case of the male; even the minor degree of shock which may follow ligature of the vas is avoided in the official German method, the vas being drawn within reach by passing a director behind it and simply divided, thus avoiding interference with the network of sympathetic and parasympathetic fibres contained in its sheath. There seems no reason to regard this simple division of the vas as likely to lead to restoration of the lumen. In practice urologists are well aware of the technical difficulties of restoring the lumen of a vas which has been narrowed or occluded by inflammation. American experience, however, suggests that vasectomy need not be regarded as permanent; a careful survey in California has shown that with proper technique operative restoration of fertility is not only possible but has been accomplished.

The position is rather different in the female, for although the risk to life of the operation may be slight it has to be taken into account. A surgeon has estimated the risk as comparable to that involved in a quiescent appendicectomy. There is, too, in the case of the woman no guarantee that sterilisation will be effective. Gynæcologists recognise the remarkable regenerative power of the Fallopian tube, and experimentally both crushing and tying operations have proved no safeguard against pregnancy. It was long supposed that the technique described by M. Madlener in 1919 had effectually circumvented nature. His method was to raise a knuckle of tube at its mid portion, crush it to paper thinness, and tie a ligature around the furrow, the loop thus including two portions of the tube and a portion of the mesosalpinx. Visualisation of the result by lipiodol has shown the hope to be unjustified, and recently two clinical failures have been reported, whether from the restoration of continuity, the formation of fistula between the peritoneal cavity and the tube somewhere in its course, or the slackening of the ligature. The official German method is based on the experience of A. Döderlein (Munich), who has since 1926 treated 30 cases by the method of Flatau. In this the tube is first rendered free by division of the mesosalpinx; it is then tied on itself in a knot and a silkworm ligature tied not too tightly around this knot. If carefully carried out there is little probability either of the lumen being restored or of any fistula formation. Although there is no mention of it in the German account presumably the possibility exists of restoring continuity if that should prove desirable by removal of the ligature. That has proved to be the case after temporary sterilisation by burying the fimbriated end of the tube beneath the peritoneum.

THE LANCET

LONDON: SATURDAY, JUNE 16, 1934

DIPHTHERIA AND THE HUMAN HERD

A NEW report by Surgeon-Captain S. F. DUDLEY and his colleagues[1] on the results of diphtheria immunisation in Greenwich Hospital School brings to a close a decennium of study of the remarkable epidemiological conditions which have obtained in the Greenwich School. Circumstances allowed of opportunity of observing, without interference, a human herd intensely infected with the diphtheria bacillus and the observers have made the best possible use of the occasion. This intense and continuous survey in relation to infection of a "semi-closed" institution with a population of approximately 1000, has few parallels in the literature of epidemiology. In 1921 permission was obtained to Schick-test Greenwich Hospital School where for some years much anxiety and sickness had been caused by diphtheria. Since then up to the time when Greenwich Hospital School left London in April, 1933, it has been possible to watch the distribution and production of immunity and infection with diphtheria bacilli in the institution. The fact that the authorities permitted Schick-testing from 1921, but withheld permission to inoculate the school against diphtheria until 1928, presented a unique opportunity to study the natural development of antitoxic immunity in a herd in which the diphtheria morbidity was exceptionally high. Had not the authorities banned the employment of anti-diphtheria inoculations it is unlikely that any modern immunologist would have dared to withhold artificial active immunisation in view of the serious drain on the time, health, and finances of the school, and no chance of studying the natural latent immunisation of the school would have occurred. Moreover the acceptance by the school authorities of inoculation against diphtheria in 1928 introduced a variable which allowed a close comparison of natural immunity, acquired by a community in which diphtheria was endemic, with a condition of immunity artificially induced by inoculation. It was found that three doses of diphtheria toxoid can produce in three months as high an immunity as three years' residence in a community where diphtheria is endemic; and further the natural process was necessarily accompanied by a high incidence of diphtheria, whereas artificial immunisation was followed by the almost complete disappearance of clinically recognisable diphtheria.

The intense degree of infection prevailing at the school during the period of observation may be judged from the following facts. During the years prior to the introduction of active immunisation the average number of cases of diphtheria notified per annum was 45. At one time during the survey 13 per cent. of the boys were carriers of the "gravis" type of bacillus, at another time over 30 per cent. of a sample of Schick positive boys became naturally Schick negative within four months. In such an institution latent immunisation proceeds at an extraordinary rate and it is calculated that three years' residence in the school produced as effective an immunisation as the usual prophylactic procedures. It must be emphasised that the natural immunity which was so induced was dearly bought. To every three or four latent immunisations one case of diphtheria occurred. It is generally accepted that in the normal population it is rare to find a Schick positive individual harbouring virulent bacilli without showing symptoms. At the same time if one accepts the "Durchseuchung" theory of the development of natural immunity to diphtheria one must suppose that most Schick positives must at some time or other harbour virulent bacilli. Under the conditions of intense infection at the Greenwich School five virulent carriers were found among 58 Schick positive boys. In this special series Schick positives were not significantly less likely to be carriers of virulent bacilli than Schick negatives. It may be noted, however, that in four out of the five Schick positive carriers, the Schick positive had been preceded by the Schick negative state, and it is likely that the boys had some measure of active immunity even though antitoxin had disappeared from their blood. After the methods of active immunisation had been introduced into the school, the "gravis" type of bacillus replaced the "mitis" as the prevailing type and coincident with this change there was an outbreak of "modified" diphtheria among boys who had been passed as Schick negative. The disease in these boys was mild and was mostly unrecognisable on clinical grounds but cogent reasons can be given for accepting the majority of them as genuine diphtheria. It is interesting to note that the incidence was greater among the artificially immunised than among the naturally immune. The circumstances were such as to put the greatest possible strain on modern methods of prophylaxis and these proved equal to the test.

A conclusion in the report which is likely to arouse controversy is that under certain conditions increase in the number of immunised individuals in a community increases the number of virulent carriers, and *ipso facto* the risk to the Schick positives of the same community. Such a possibility has often been contemplated by students of diphtheria prophylaxis but very little evidence that it is more than a possibility has hitherto been produced. Surgeon-Captain DUDLEY supports his closely sustained argument with observations outside the Greenwich School such as those of E. S. GODFREY, but we question whether these observations really support his contention. Nevertheless in matters of ecology it is recognised that interference in one

[1] Active Immunization against Diphtheria: its effect on the Distribution of Antitoxic Immunity and Case and Carrier Infection. By Sheldon F. Dudley, Percival M. May, and Joseph A. O'Flynn. Medical Research Council, Special Report Series No. 195. London: H.M. Stationery Office. Pp. 140. 3s.

direction may lead to unforeseen results in another and the provocative views advanced in this report are likely to stimulate investigation. The authors constantly remind us that the conditions at Greenwich were exceptional and what is true of that institution is not necessarily true of others. The key of the situation at Greenwich may perhaps be found by looking at the two photographs that serve as frontispiece to the report. One called "the human herd" depicts the Greenwich boys closely packed at dinner, and the other their grossly overcrowded sleeping quarters. Anyone with a sense of modern social progress might well wonder whether the phrase "the human herd" is here used in a scientific or in ironical sense, but perhaps in this case the meanings are not far apart.

Many who have studied the successive reports of the diphtheria infection at the Greenwich School must have been disposed to criticise the hygienic arrangements of the school. The Governors of the school, like the Pope's mule, have indeed saved up their kick for a number of years but it must be admitted that they have eventually used it to some purpose. Within the last year or two the school has been removed to splendid quarters in the country; it may be anticipated that in its new and ideally healthy environment it will cease to provide such a wealth of material for the study of herd infection. To the practical hygienist the end of trouble is not the least instructive part of it and we hope that the epidemiological history of the school will some day be continued, though it is likely to prove uneventful. It would, we think, complete an excellent commentary on the right and the wrong way of "herding" human beings. Meanwhile for those interested in the broader aspects of epidemiology and herd immunity, as well as those concerned with diphtheria prophylaxis, the report provides a mine of interesting data.

THE DETERMINATION OF POST-MATURITY

THE incidence and dangers of post-maturity of the fœtus are subjects on which writers and teachers of obstetrics are unduly reticent. It is perhaps too readily assumed that, where the calculated date of delivery has long passed, the patient has been inaccurate in recording her last menstrual period or that impregnation has immediately preceded the first missed period. Medical officers working in maternity hospitals have learned to place little reliance upon the statements of patients unless these are corroborated by the results of physical examination, and among such patients there are indeed many reasons why a wrong date for expected delivery may be offered either in good faith or to hide some failure to comply with rules or doctor's orders. Ignoring errors arising from inaccurate information or calculation which can often be corrected by physical findings, it is remarkable how many patients in actual obstetric practice do not spontaneously go into labour on the date which was expected for their delivery. Most of these ultimately produce babies which present the recognised signs of maturity in respect of length, condition of skin, finger nails, absence of lanugo, presence of plentiful vernix caseosa, and, in the male infants, testicles in the scrotum; and where these things are so it may be supposed that one or other of the common explanations will be correct. A few cases of pregnancy of longer than expected duration result in intra-uterine fœtal death which is followed at varying intervals by spontaneous delivery of a macerated fœtus and a placenta which has undergone degenerative changes indicative of senility, such as white infarcts of varying size. Investigation brings to light no explanation of the death of the fœtus beyond the microscopic appearance of the placenta which shows some degree of obliterating endarteritis of the small vessels. In other cases where delivery deemed overdue has occurred spontaneously or after induction of labour, the child at birth shows characteristics which are generally ascribed to post-maturity, the placenta also appearing senile. Such fœtuses are definitely longer than the normal 20 inches. The head is larger in all its diameters, the bones of the vault are harder, so that moulding is slight, and the sutures are narrow, so that overriding is minimal. A large unmoulded head obviously conduces to delay in the second stage of labour, and may result in laceration of the perineal body and even in still-birth. The classical picture of such a post-mature child is with skin thicker and more opaque than usual, and colour nearer grey than the healthy pink of a normal fœtus at term. Peeling tends to occur all over the body, being especially marked on the palms of the hands and the soles of the feet. As the liquor amnii in these cases is usually green in colour from admixture of meconium, the threads of peeling skin are stained green or greenish-yellow, so that during the first few days after birth the child has a more or less piebald appearance until the peeling is complete. The nails of the fingers and toes extend beyond the tips of the digits. Presumably as a result of a placenta no longer sufficient, the child is usually very thin and its weight is low for the size of its skeletal framework. Whether this is a picture occurring significantly more often in children born after the expected date is not certain. It is at least possible that variations in rate of development occur in individual babies.

The proportion of children born alive after the expected time who show definite signs of post-maturity seems to have been somewhat neglected by those searching the records of maternity hospitals for statistical data, possibly because experience has made them sceptical of expected dates. But all obstetricians can quote cases that have been watched almost throughout the antenatal period and have failed to go into labour at term. When, because of the increasing size of the fœtus and the distress of the mother, pregnancy has been terminated a week or two after the expected date of delivery, a fœtus 20½ to 21½ inches in length has been born. One lying-in hospital records the following patients:—

A private patient whose virginity before marriage was not doubted was found to be 12 weeks

pregnant 13 weeks after marriage; quickening occurred at 18 weeks, and engagement of the fœtal head at 36 weeks. Labour took place 34 days after the expected date, when delivery was effected by forceps of a female child weighing 10 lb. and measuring 22½ inches in length. In a second pregnancy labour was induced one week after term and the female child delivered weighed 9¼ lb. and measured 20½ inches. At the third pregnancy labour was induced at term and a mature male child was delivered who weighed 9 lb. and measured 20¼ inches. At the time of induction of the second and third labours the cervical canal was not taken up, and there were no signs of the onset of labour. Another patient gave birth to a female child weighing 7¼ lb. and measuring 21½ inches, born three weeks after the expected date of delivery. Induction of labour in the second pregnancy at term resulted in the birth of a female child weighing 6¼ lb. and measuring 20 inches.

When, whether because of the previous obstetric history of the patient or her present history or physical condition, post-maturity is suspected, the obvious course is to attempt to induce labour medicinally. The method of induction used in these circumstances varies in different clinics; a favourite one consists of the administration of a large dose of castor oil, followed by quinine or intramuscular injections of pituitrin in ℿiii doses at two-hourly intervals to a total of 2 c.cm. If labour fails to start after this treatment, it is highly probable that after all the patient is not at term, and therefore surgical interference would be contra-indicated. It is not, however, the choice of a method of induction that troubles the practitioner, but the determination of the criteria for intervention in any individual patient, and here obstetric literature gives him little help. Careful records of the case-histories of maternity patients among educated women might be of great value in estimating the frequency of pregnancy lasting longer than the expected duration of 280 days. Details of length and weight of fœtuses, with notes on cutaneous appearance and the condition of the placenta, would serve to determine how many of them showed the accepted criteria of post-maturity; and it should be remembered that evidence of stage of development of a fœtus is valueless unless it is supported by records of fœtal length, which is much less variable than its weight. X ray examination of the tibia immediately after birth may reveal a centre of ossification in the upper epiphysis of the tibia, of which the significance will depend on the sex of the child. Generally speaking this centre is manifest in girls before birth, but in boys does not normally appear until four weeks or even longer after birth.

DESENSITISATION FOR HAY-FEVER

HAY-FEVER is one of those minor maladies which the doctor, if not a sufferer himself, is apt to deal with a little light-heartedly, but which the patient cites as a reproach to the state of medical knowledge. In Germany the patient's protest has taken the form of a Hay-Fever Association which (appropriately enough) holds its annual meeting in the middle of the hay-fever season in some such refuge as the open treeless island of Heligoland. The medical adviser on the association's committee recently published a review[1] of the treatment of hay-fever, concluding with an imposing table—compiled apparently from the records of the association—in which the therapeutic effects of no fewer than 90 drugs and methods of treatment in over 2000 cases are set forth and analysed. He strongly advocates "rational therapy"—i.e., identification of the sensitising pollen by skin-testing (URBACH,[2] of Vienna, prefers the direct intranasal application of pollen extract on a swab) and subsequent desensitisation of the patient.

The German methods and results of desensitisation are critically considered by HANSEN,[3] who treats from 300 to 600 cases of hay-fever annually in Lübeck. He finds, by skin-testing, that over 90 per cent. of his patients are sensitive to grass pollens, while from 10 to 20 per cent. of them are sensitive to the pollens of the lime tree and the acacia. His desensitisation follows Walker's method—namely, a series of 20 subcutaneous injections of increasing small amounts of pollen extract (from 0·2 c.cm. of 1 in 1,600,000 to 0·7 c.cm. of 1 in 5000) at three to four-day intervals, timed to end at the opening of the hay-fever season in the latter half of May. Alternatively he sometimes uses an intensive series of daily doses for a month, and sometimes spreads the course throughout the year. This treatment has enabled over 70 per cent. of his patients to run the gauntlet of the pollen season almost or quite without symptoms. In less than 10 per cent. it has failed completely. HANSEN attributes some unsatisfactory results to the use of grass-pollen extract only, in patients sensitive to tree pollens as well, and others to inadequate dosage: he is emphatic that the early doses and the increases must both be small, while the final dose attained must be large. A successful desensitisation is seldom permanent, and in most cases the treatment must be repeated annually, at least for several years. Anaphylactic reactions of appreciable severity occurred once in every 300 injections, in the form of immediate shock, urticaria, œdema of the Quincke type, or focal exacerbations, and seemed to be relatively more common in women in the four days preceding menstruation; they were treated by the recognised procedure of applying a tourniquet above the point of injection and giving adrenaline and calcium gluconate. RICE[4] has recently added the refinement of applying a second tourniquet (in the form of a sphygmomanometer cuff) to the opposite arm above the site of injection of the adrenaline; this was done in a patient who had by accident received a gross overdose of pollen extract, and the rates of absorption of both extract and adrenaline could then be nicely controlled in accordance with the resulting symptoms by appropriate short relaxations of the two tourniquets.

[1] Med. Welt, March 17th, 1934, p. 365, and 24th, p. 404.
[2] Med. Klin., Feb. 23rd, 1934, p. 253.
[3] Dent. med. Woch., Feb. 9th, 1934, p. 210, and 16th, p. 233.
[4] Jour. Amer. Med. Assoc., April 14th, 1934, p. 1222.

The experience of these German workers accords well with that of FREEMAN [5] in this country, described in our columns a year ago. Since the hay-fever season is now upon us, it is mostly too late to offer its victims for this year any but symptomatic treatment; but this is the time to assure them that if they will submit themselves to thorough desensitisation under careful and expert supervision, beginning about March, they will have some prospect of comfort next season.

UNEMPLOYMENT AND MENTAL DISORDER

THE number of unemployed people in England is lessening, but they are still an urgent problem in politics and national economy, and, though less obviously, in mental hygiene. It cannot be supposed that men can remain idle and impoverished for long periods without suffering harm to their mental health. If unemployment is considered without regard to this, its effective cure is likely to be delayed, however good the social measures for removing it. No one can tell what proportion of those long unoccupied would be unable for psychological reasons to return at first, or at all, to employment when it became available.

The absence of adequate information about the psychological effects of unemployment is probably due to the understandable reluctance of the unemployed man to submit to minute inquiry into his private life. General impressions are supplied by many people whose work brings them into contact with the problem, but these remain impressions, seldom confirmed by statistics and usually biased by the particular circumstances of the relationship or by the sentiments of the observer. A psychiatrist, for example, sees only those who have developed some form of mental disorder, and he might on inadequate grounds assume that these patients represented a fair sample of the unemployed or that in them unemployment was the main causative factor of their illness. A different but even stronger objection may be made against the use for scientific purposes of first-hand accounts of uncertain provenance. Those contained, for example, in a recently published work entitled "Memoirs of the Unemployed," [6] are doubtless authentic, and are possibly as typical as the collectors hope; but the described method of collection leaves this uncertain. Such a book is painfully interesting; its anonymous authors tell individual tales of suffering and often of moral deterioration, undeserved and resisted, that cannot but excite sympathetic discontent at our imperfect social order, but they cannot be a basis for defensible opinions on the general physical or mental effects of unemployment. The concluding chapter, by Dr. MORRIS ROBB, shows how easily the observer may be led into dubious induction; a few patients whose mental illness is the selective factor, and second-hand accounts from friends and acquaintances, cannot be regarded as providing adequate material for the assessment he offers of the psychological effects of unemployment.

There is no reason to doubt that discontent, resentment, irritability, anxiety, depression, laziness, and other ills of the spirit commonly go in company with forced unemployment and unfilled leisure; there is no clear evidence for it, but it is probable and understandable. This is, however, by no means true of the morbid heightening of such effects which we see as mental disorder. In a carefully examined series of patients in whom psychosis or psychopathic disturbance of personality is associated with long-standing unemployment, the constitutional factor may be found to be more significant than the social situation in many cases. To say that "unemployment is often the immediate cause of a severe psychic illness" is to be dogmatic on poor grounds; such a causation is demonstrable only in rare instances. There is strong reason to believe that forced unemployment favours the manifestation of mental, as of physical, ill-health in predisposed persons, but in this it is not specific; it acts as do other adverse circumstances, and its importance has not yet been determined by a study of unexceptionable material. Material that is in other regards unexceptionable, such as that in the volume under consideration, does not meet the strict requirements for forming a medical judgment. It may be that general conclusions are here impossible, or that the necessary data are hardly to be collected; well-informed impressions are perhaps the best that can be obtained. In any case, though unemployment is an evil, all will agree, to be combated on medical as on social grounds, it is better to recognise the vagueness of our present knowledge of its effects than to let it be invoked as a cause of manifold mental troubles in much the same way as the war was invoked some years ago.

WALTER FLETCHER

WE publish elsewhere a letter setting forth the unanswerable reasons why a permanent memorial to the services of Sir Walter Morley Fletcher, first secretary of the Medical Research Council, should be instituted. It is signed by persons whose positions, official, scientific, and literary, are such that words in explanation of the authority with which they write would be intrusive, while the suggested form which the tribute to Fletcher's memory should take is admirable. First, they say, the memorial should be personal, and secondly it should be associated with the furtherance of the causes which Fletcher had so much at heart and for which he worked with such devotion and success. With all the signatories Fletcher must have come into close contact personally in Cambridge, London, and the social world, as well as officially, and they set out a simple and eloquent justification of his claims upon the memories of us all. The memorial should be instituted, and in the form suggested; we hope and believe that our readers will share this view, and help to make the movement a large and prompt success.

[5] THE LANCET, 1933, i., 630.
[6] Memoirs of the Unemployed. Introduced and edited by H. L. Beales and R. S. Lambert. London: Gollancz. 1934. Pp. 287. 5s.

ANNOTATIONS

TRELOAR HOSPITAL COMPLETED

FOUNDERS' Day at Alton on Monday last gave the patrons of Lord Mayor Treloar Cripples' Hospital their first opportunity of seeing as a going concern the hospital completely rebuilt in bricks and mortar. It is one of the many remarkable features of Alton that for nearly thirty years the pioneer work of the hospital was carried on, and carried on efficiently, in timber structures remaining as a legacy of the South African War. The foundation-stone of the new buildings was laid nearly five years ago and for the last few months all the five new ward blocks have been in use. On Monday there was not a single bed in the wards; all the three hundred children were on the terrace, 984 feet long and 25 feet wide, which joins the five ward blocks and is the last word on sun-and-air treatment in this or indeed any country. Colonel the Hon. Frederick Lawson, chairman of the hospital, who welcomed the guests, including the Lord Mayors of London and Portsmouth, took the unusual course of saying nothing in commendation of the completed scheme, simply asking visitors to see for themselves and draw their own conclusions. The cost to date has been in the region of £150,000, and another £50,000 are required to rehouse the nurses and staff on the same modest but efficient scale, for although the hospital as such is complete, the administration is still suffering from lack of space and out-of-date equipment. During the afternoon the visitors found attraction in demonstrations of treatment in the new light department, of school handicrafts, of the manufacture of splints, and of remedial exercises. In conclusion we may recall a remark made in these columns when the rebuilding was commenced: when complete the Treloar Hospital will have a material framework worthy of the character and spirit of the work carried on within it. Happily that is now the case.

SPECIFIC THERAPY AGAINST TYPE III. PNEUMOCOCCUS

IN studies reported within the past two years O. T. Avery and R. Dubos have described the isolation from a soil bacterium of an enzyme active against the specific polysaccharide of the Type III. pneumococcus. Although the destruction of its capsular polysaccharide does not kill the pneumococcus it appears to render it susceptible to the normal defence mechanisms of the body, since the enzyme protects mice against infection and exerts a curative action on an experimental infection already established. K. Goodner, Dubos, and Avery later showed that a similar curative effect was exerted on rabbits previously infected by the intradermal injection of Type III. pneumococci. The effect of this enzyme, in vitro and in vivo, is, it should be noted, strictly type-specific. It does not attack the polysaccharides produced by other types of pneumococci, nor does it exert any protective or curative effect on infections produced with them. Two further reports from the Rockefeller Institute would seem to increase the probability that this enzyme may prove of service in the treatment of Type III. pneumonia in man. In the first,[1] T. Francis, Jr., and E. C. Terrell describe the production of a typical lobar pneumonia by the intratracheal or intrabronchial inoculation of Type III. pneumococci into Java monkeys (*M. cynomolgos*). The records of these infections are very complete. They include repeated blood cultures, repeated leucocyte counts, and repeated X ray photographs during life, and complete necropsies on those monkeys that died. There can be little doubt that the experimental disease in the monkey is closely similar to the natural disease in man. In the second paper,[2] Francis, Terrell, Dubos, and Avery report the results obtained in the treatment of these experimental monkey infections with the bacterial enzyme. They note the difficulty of obtaining adequate controls, because of the wide variations in the severity of the disease in untreated monkeys; but their results are clearly encouraging. They divide their treated and untreated animals into four groups, according to the severity of the bacteræmia during the first three days of the disease. In the two intermediate groups, with bacteræmia of moderate severity, the treated animals showed a definite advantage over the untreated controls. One of 24 treated monkeys died as against 18 of 32 untreated. In the mild infections there was little opportunity for the enzyme to give evidence of its therapeutic effect. No rabbit died in either group. In the severest cases it appeared to be relatively ineffective in modifying the course of the disease.

[1] Jour. Exper. Med., 1934, lix., 609.

[2] Ibid., p. 641.

BACTERIOLOGICAL ANALYSIS OF WATER

THE tendency towards standardisation of technical procedure in routine analysis is exemplified in the report recently issued by the Ministry of Health on the bacteriological examination of water-supplies.[3] Hitherto every public health laboratory has employed its own technique, and it is not therefore surprising that discrepancies should have occurred in the reports of different analysts on the same samples of water. Where, as in water examination, an essentially quantitative technique is required, it is especially important that all workers should use the same methods; otherwise interpretation must vary from one laboratory to another. On the other hand, it is against the interests of progress to standardise too rigidly; a certain margin of freedom is not only permissible but actually desirable. The committee responsible for the present report [4] seem to have been well aware of this, and have therefore chosen to lay down detailed descriptions of the simple procedures, such as the agar plate count, while allowing a considerable latitude for the determination of the various indices of excretal pollution. An admirable description, likely to be of great assistance to the sanitary inspector, is given of the precautions to be observed and the points to be noted in the collection of samples, and a maximum interval of eight hours between the taking of the sample and the commencement of its analysis is recommended. In the analysis itself the old gelatin plate count is replaced by an agar count at 20–22° C., and most useful information is provided on the ways in which the experimental errors inherent in the plate count may be reduced to a minimum. In the determination of coli one

[3] The Bacteriological Examination of Water-supplies. Ministry of Health Reports on Public Health and Medical Subjects, No. 71. London: His Majesty's Stationery Office. 1934.

[4] Dr. T. Carnwath (Ministry of Health), chairman; Dr. M. M. Barratt (assistant bacteriologist, Lister Institute), Dr. John F. Beale (Counties Public Health Laboratories), Mr. H. T. Calvert, D.Sc. (Ministry of Health), Sir Alexander Houston, F.R.S. (late director of water examination, Metropolitan Water Board), Dr. W. M. Scott and Dr. F. R. Seymour (Ministry of Health), Mr. A. F. Standfast, Dip. Bact., and Prof. G. S. Wilson (respectively research worker and professor of bacteriology, London School of Hygiene and Tropical Medicine).

50 ml., five 10 ml., five 1 ml., and in certain samples five 0·1 ml. quantities of water are to be examined; and to avoid the customary but most unsatisfactory way of issuing the report as "Present in 10 ml., absent from 1 ml.," tables are provided, calculated from a formula based on the theory of probability, by which the most probable numbers of coli in 100 ml. can be determined. The further differentiation of coli into the fæcal coli, the intermediate, and the aerogenes-cloacæ types is made contingent on the probable number of organisms giving the presumptive coli reaction. Here the committee are very diffident in expressing an opinion. They suggest, however, that if less than two coli are present in 100 ml., the water is of sufficiently high standard to render differentiation unnecessary; again, if ten or more coli are present, the water is probably so bad that differentiation is waste of time. If, however, there are between two and ten coli per 100 ml., it is advisable to ascertain the proportion of the different types present. If they prove to be mainly fæcal coli, the water is condemned; if, on the other hand, they are mainly of the intermediate or aerogenes type, no immediate steps towards improving the source of supply need be contemplated. Appendices contain a description of the standards to which apparatus should conform, and of the preparation of the media that are recommended in the text. The report will be welcomed by all who are engaged both in the analytical and the administrative control of water-supplies.

NERVOUS COMPLICATIONS OF MUMPS

THE nervous complications which may precede, accompany, or follow an attack of mumps are varied and striking but fortunately rare. C. B. McKaig and H. W. Woltman [1] report the occurrence of myelitis, of which they can find only one other example in the literature, and take occasion to review the other nervous sequelæ. Their case of myelitis occurred in a girl of 16 years on or about the fourteenth day after an attack of mumps from which she had apparently recovered completely. General malaise and prostration lasting some hours was followed by intense pain between the shoulder-blades. Thereafter symptoms and signs of transverse myelitis at the level of the sixth cervical segment developed, although the subsequent course of the case led the authors to think that there was also extensive destruction of the cord below the level indicated. McKaig and Woltman consider that encephalitis is probably the gravest complication to be feared, although recovery is the rule and residual troubles for the most part clear up eventually. Meningitis may precede the parotid swelling but more commonly makes its appearance within the first two weeks after the attack, though according to A. Wallgren [2] it may be the sole manifestation of infection. The course of mumps-meningitis is benign. Lymphocytosis is the most constant finding in the cerebro-spinal fluid. Discussing neuritis and polyneuritis, McKaig and Woltman express the view that the lesions are more likely to be secondary to meningitis rather than to arise in the peripheral distribution of the affected nerves and that therefore the term meningo-radiculitis would be more appropriate. There are, however, several cases on record of flaccid paralysis of all four limbs associated or not with other paralyses. Although complete recovery is the rule, one case is reported of a fatal terminal bilateral diaphragmatic paralysis which followed mumps-tetraplegia in a woman aged 37. Paralyses of the Duchenne-Erb and Aran-Duchenne type have also been recorded. Th. Merrill [3] describes a case of mumps in a woman of 65 in whom the right parotid only was affected and was not greatly swollen. The initial symptoms which persisted throughout the attack were severe earache and deafness. Ultimately the 2nd, 3rd, 7th, 8th, and 9th cranial nerves on the right side were involved, giving rise to characteristic paralyses which lasted for two months before disappearing completely. On the other hand, according to McKaig and Woltman, deafness following mumps is usually complete and permanent. Fortunately it is unilateral in three-quarters of the cases, occasionally on the side opposite to the parotitis. The onset is rapid and may be accompanied with tinnitus and vertigo; the usual explanation is that a sudden exudate into the labyrinth has occurred. Mental disturbances in mumps are uncommon but may coincide with the onset of orchitis when they usually take the form of violent delirium lasting a few days. Psychoses such as hallucinations and depressive mania have also been reported. Many years ago M. H. Gordon [4] showed that the causal agent of mumps was a filtrable virus and recently C. D. Johnson and E. W. Goodpasture [5] have confirmed this; but it is not definitely known whether the same agent is responsible for both the parotitis and the nervous manifestations, or whether the latter arise as a result of activation of a virus already present in the nervous system. McKaig and Woltman note in this connexion that the results of serial and repeated spinal punctures suggest the involvement of the nervous system in most cases of mumps and that nervous symptoms may precede the parotitis.

[1] Arch. Neurol. and Psychiat., April, 1934, p. 794.
[2] Acta Paed., 1926, vi., 53.
[3] Bull. et Mém. Soc. med. des Hôp. de Paris, April 23rd, 1934, p. 526.
[4] THE LANCET, 1913, ii., 275; and Reports of the L.G.B. on Public Health and Medical Subjects, 1914, n.s., No. 96.
[5] Jour. Exper. Med., January, 1934, p. 1.

COÖRDINATION OF MEDICAL RESEARCH IN EAST AFRICA

THE various services concerned with medical, veterinary, and agricultural problems in the East African Territories have in the past worked more or less independently, and there has thus been considerable overlapping and duplication of effort. Now, thanks partly to improved communications by air which have brought the administrative centres within a few hours of each other, coördination is progressing. Advantage has been taken of the periodical meetings of the Governors to arrange a series of technical conferences. So far four have been held, devoted respectively to the tsetse fly and trypanosomiasis, to general medical problems, to veterinary matters, and to agriculture. Other meetings are being arranged and it is hoped that they will become annual fixtures. The recently published report of the conference on general medical research shows the advantage of pooling information and of measures to ensure personal contact between officers engaged in various branches of work. Not the least important feature is the subdivision of labour by the allotment of special subjects for inquiry to areas and laboratories best equipped for their study. The conference, which was held at Entebbe, lasted three days and was attended by delegates from Kenya, Uganda, Tanganyika, Nyasaland, and Zanzibar. The administration of the Belgian Congo was represented by Dr. Luc Fontana, director of medical services for the Eastern Province. Dr. W. H. Kauntze, director of medical services in Uganda, presided, and the members of the conference included the

directors of the Kenya and Tanganyika services and experts in bacteriology, pathology, medical entomology, biochemistry, and veterinary medicine from the various territories. The presence of the veterinarians proved of great assistance, and it was agreed to invite to future meetings representatives of other allied technical services. Among the subjects proposed for study is the basal metabolism of the African. Little is known about this at present, and the extensive inquiries which have been made into dietetics in the native have been founded upon the basal metabolism of the European. A general inquiry is also to be made into the incidence of malignant disease, particularly the site and histology of tumours. Research is to be carried out on anæmia which is said to be almost universal in the indigenous population. Here again only European standards are available for comparison.

The bacteriology of water-supplies, the study of native foodstuffs, and rural sanitation are in the programme, and there are to be special investigations of malaria, dysentery, tuberculosis, and helminthiasis. The veterinary staff will collaborate in several of these inquiries. A valuable outcome of the conference has been an arrangement for the interchange of sera between the laboratories to ensure comparable results, notably in yaws and syphilis. It is proposed to circulate quarterly interim reports of the work in progress at different centres and there is little doubt that these reports will provide a valuable stimulus to research.

ABSORPTION OF FLUID FROM THE PLEURAL CAVITIES

WITH a view to gaining knowledge of the effect of certain factors on the absorptive activity of the pleura, R. C. Brock[1] has carried out a series of experiments on the rabbit which possesses a mediastinum more stable and impermeable than that of many animals. He used intravenous nembutal anæsthesia and studied the effect on pleural absorption of: (1) the amount of fluid in the cavity; (2) the depth of respiratory movement; (3) inflammation of the pleural membrane; (4) the coincidence of pneumothorax. Rapidity of absorption was measured in every case by injection of a fluid containing a lethal dose of strychnine in a known volume. It was found that the more quickly the animal died the more rapid had been its absorption of the lethal dose. By withdrawal of the fluid remaining in the pleural cavity after death it was possible to prove that the volume absorbed had, in fact, been that which contained a fatal dose. Absorption rate was quicker with increase of the amount of fluid, and with increase in the depth of the respiration. If two rabbits each receive injections of 50 c.cm. of the strychnine solution the one to which CO_2 is administered dies twice as quickly as the other. When a large amount of fluid is present and the respiration is deep and laboured, Brock finds that absorption, and, therefore, death, occurred at a surprisingly rapid rate. Laboured respiration produces its effect, he believes, by increasing the circulation in the pleural vessels. Injection of a few minims of turpentine produced an intense serofibrinous reaction of the pleura within twenty-four hours. The effect of this inflammation was to hasten absorption; death from the strychnine solution was three times as rapid. This was not due to increased sensitivity of the sick animal, since a lethal dose injected into the sound side in an animal with unilateral acute pleurisy caused death no sooner than a corresponding dose in a healthy animal. It is clear that inflammation definitely increases the rate of absorption, and this is attributed to the increased vascularity. The death of these animals from absorption of strychnine solution from their pleural cavities answers the question sometimes raised whether absorption is possible while fluid is being actively poured out by the pleura. The accumulation of fluid in pleurisy is evidently to be accounted for by the excessive rate of its excretion, and not by failure of absorption on the part of the inflamed membrane. Contrary to the result expected, the presence of a pneumothorax at least doubled the rate of absorption. Brock's remark that "the patient who is grossly dyspnœic with a large pyopneumothorax, and an acutely inflamed pleura is absorbing toxins at an alarming rate," sums up the clinical application of his observations.

The clinical bearing of these results is discussed. The factors influencing the absorption of fluids from the pleural cavities is of importance, since it may be of great advantage to a patient that disappearance of a large chronic effusion should be hastened, and still more valuable would be knowledge that would enable us to control the processes at work in an acute empyema. Pyothorax of the synpneumonic type has quite often, temporarily at least, to be left undrained, because the condition of the underlying lung precludes operative interference. Meanwhile the patient may be absorbing micro-organisms and toxins. Brock draws from his experimental results the conclusion that during the course of an acutely infected pleurisy aspiration should be repeatedly practised to diminish the total volume of fluid. Aspiration twice daily is not too much, and will have the added advantage of relieving dyspnœa. The replacement of fluid by a *smaller* quantity of air will, he thinks, do little harm, whereas the *addition* of air to fluid already present will definitely increase absorption. Where the aim is to aid absorption, replacement of fluid by a larger amount of air and giving the patient CO_2 to inspire is logical treatment.

[1] Brit. Jour. Surg., April, 1934, p. 650.

THE DANGERS OF CARBON BISULPHIDE

IT is not generally realised that carbon bisulphide is not only unpleasant in smell but noxious. Workers exposed to its vapour even in small quantity over some weeks or months are liable to symptoms of ill-health of which the first to appear are nausea, indigestion, headache, and giddiness, sometimes accompanied by emotional disturbances which may frankly be hysterical in character. The breath has a characteristic odour, the tongue is pale and flabby, and the face is pale. An appearance of anxiety with sweating of the hands and forehead suggest mild absorption; with continued exposure the disturbance increases and is accompanied by impairment of memory, mental dullness, and depression. The speech may be affected and later there occurs a contraction of the visual fields with diminution of the power of accommodation. In acute poisoning, following exposure to high concentrations over short periods, the symptoms are those associated with acute mental disturbance and, in some cases, acute mania. A memorandum just issued[1] from the Home Office calls attention to these symptoms which should be watched for in persons working in artificial silk or viscose paper works, rubber works, or places where carbon bisulphide is made or may be used.

It is poisonous in concentrations of about 1 in 3000

[1] Memorandum on Precautions against Dangers of Poisoning, Fire, and Explosion in connexion with the use of Carbon Bisulphide in Artificial Silk, India Rubber, and other Works. London: H.M. Stationery Office. 1934. 3d.

of air and dangerous in concentrations of 1 in a thousand. It is moreover very volatile, boiling at 46° C., and yielding a vapour which will fire at 125–135° C.—not very much above the boiling point of water. The flash point of the liquid is below minus 20° C. Most chemists who have used carbon bisulphide as a laboratory solvent have experience of the readiness with which it will ignite when only ordinary precautions are taken, and of the choking smell of the sulphur dioxide produced when it burns. A liquid which easily yields a highly poisonous and inflammable vapour and a poisonous product of combustion is, clearly, a source of danger to those who use it, and compulsory notification of carbon bisulphide poisoning in accordance with the order of the Secretary of State of Dec. 31st, 1924, is obviously a wise precaution.

EVIPAN AND ASTHMA

SINCE evipan is at the present time finding great favour, particularly for use on patients whose respiratory mechanism is at fault, its effect in a case reported in the *Münch. medizin. Wochenschrift* of Feb. 16th (p. 257) is noteworthy. The patient was a woman of 39, a subject of pulmonary tuberculosis and of asthma, on whom it was desired to perform a short gynæcological operation. Evipan in a 3 c.cm. dose was injected over a period of six minutes—i.e., at a rate slower than usual. The respiration came to a standstill and it was only after intravenous injection of 10 c.cm. coramine and the performance of artificial respiration that it was restarted after some minutes. That the author, Dr. P. Feldweg, regards this experience as a warning against the use of evipan on asthmatic subjects is made clear in the significant title of his article, "Bei Asthma kein Evipan"!

CONFERENCE ON VITAMIN STANDARDISATION

AN international conference on vitamin standardisation is being held this week at the London School of Hygiene and Tropical Medicine, under the auspices of the Permanent Commission on Biological Standardisation of the Health Organisation of the League of Nations. The following are taking part in the Conference, over which Prof. E. Mellanby is presiding: Prof. J. C. Drummond (University College, London); Prof. H. V. Euler (Stockholm); Prof. L. S. Fridericia (Copenhagen); Prof. B. C. P. Jansen (Amsterdam); Prof. P. di Mattei (Pavia); Prof. E. M. Nelson (Washington, D.C.); Prof. E. Poulsson (Oslo); Madame L. Randoin (Paris); Prof. H. Steenbock (Wisconsin); Prof. A. Szent-Györgyi (Szeged); with Dr. W. R. Aykroyd (League of Nations, Geneva) and Miss H. Chick, D.Sc., Technical Secretaries. The following are attending the Conference as observers: Dr. M. H. Brown (Connaught Laboratories, University of Toronto); Miss K. H. Coward, D.Sc. (Pharmaceutical Society of Great Britain); Mr. P. Hartley, D.Sc. (National Institute for Medical Research); Dr. Lormand (Laboratoire National de Contrôle des Médicaments, Paris); Dr. Mendez (Instituto Tecnico de Farmacobiologie, Madrid); Dr. M. Tsurumi (Japanese Delegate to the Health Committee of the League of Nations); Dr. A. Jung (University of Bâle). This Conference is the second of its kind. The first Conference, held in 1931, established standards and units for vitamins A, B, C, and D, which have since been widely used in many countries throughout the world. Although the standards originally recommended have on the whole worked well, the rapid advance of scientific work in this field has made it necessary to review the findings of the first conference in the light of recently acquired knowledge. Several vitamins are now available in a relatively pure state, and it is probable that the present conference will recommend the replacement of the standards chosen in 1931 by purer preparations than were available at that date, especially in the case of vitamins C and D.

ADRENAL DENERVATION

Dr. Crile is now able to summarise [1] no less than 308 cases in which denervation of one or both of the suprarenal glands has been carried out. He finds that the unilateral operation, performed in 52 cases, is followed by no ill-effects but is less effective than the bilateral; the latter, however, is occasionally followed by attacks of vomiting and diarrhœa. His 308 cases include 76 of neurocirculatory asthenia (hyperadrenalism), 79 of hyperthyroidism, 37 of peptic ulcer, 40 of epilepsy (in some of which adrenalectomy was done), and a few of diabetes. The clinical results are stated to be good. Of the patients with neurocirculatory asthenia, 87 per cent. were cured and 7 per cent. improved. Of those with hyperthyroidism, 95 per cent. were cured. The treatment advocated for the majority of thyrotoxic patients is thyroidectomy, adrenal denervation being reserved for those with residual or recurrent hyperthyroidism. In the cases of peptic ulceration, it is stated, cure followed in 93 per cent. and improvement in 7 per cent., and Crile does not hesitate to recommend the operation when the customary medical and surgical treatment has failed. Of the epileptic patients, 33 per cent. are described as improved or cured. Adrenal denervation is held to be contraindicated in established cases of hypertension, and has proved useless in Raynaud's disease and scleroderma. The series included two deaths, both due to serious injury to the adrenal glands.

AFTER discussing many aspects of medical education (see report on page 1306) the General Medical Council appointed a Curriculum Committee with the following membership: Dr. H. L. Tidy (chairman); Prof. J. B. Leathes; Prof. J. S. B. Stopford; Sir George Newman; Dr. H. G. Dain; Prof. L. P. Gamgee; Prof. R. J. Johnstone; and the president ex officio. This committee is to consider information and proposals received by the Council with respect to the revision of the curriculum, and to report to the Council.

THE Albert medal of the Royal Society of Arts for 1934 has been awarded to Sir Frederick Gowland Hopkins, president since 1930 of the Royal Society, "for his researches in biochemistry and the constituents of food." This medal was instituted in 1862 as a memorial to the Prince Consort, sometime president of the Society, and is awarded annually for distinguished merit in promoting arts, manufactures, or commerce.

---

[1] Crile, G.: Amer. Jour. Surg., May, 1934, p. 378.

A DISCUSSION on the Nature of Sex and its Sociological and Legal Implications will take place in the section of obstetrics and gynæcology of the Royal Society of Medicine on Friday, July 6th, at 8.15 P.M., and the members of the Medico-Legal Society have been invited to take part. Sir Bernard Spilsbury, president of the Medico-Legal Society, and Lord Riddell will, it is hoped, join in the discussion.

PROGNOSIS

A Series of Signed Articles contributed by invitation

VI.—PROGNOSIS IN JUVENILE RHEUMATISM *

In juvenile rheumatism the disease of the heart (carditis) is not only the sole cause of death, but the only manifestation of the infection which may lead to permanent damage. All the other lesions clear up completely. Persistent joint disease is not a sequel to acute rheumatic arthritis. Subcutaneous nodes may linger long before they disappear. Even chorea, though it may last off and on, more or less, for two years or more, or may be subject to relapses for several years, will, if the child survives, ultimately subside, leaving much the same type of nervous system as before its development. It may, however, reappear later during pregnancy.

We are, therefore, mainly concerned with the prognosis in rheumatic heart disease in young subjects; and it is well recognised that nothing like accuracy in this matter can be attained owing to one special factor—namely, the great tendency shown by all rheumatic children to develop recrudescences of their infection. The heart of a child, once compensation is established, never deteriorates, still less breaks down, from mere mechanical overstrain; it is always fresh infection that turns the scale against it. And the same is true to a far greater extent than is generally recognised in the rheumatic heart disease of adults.

Thus, when considering prognosis in juvenile rheumatism, we have first to discuss the liability to future reinfections. But before going into detail, since the outlook differs very materially in cases in which the heart disease is mild and those in which it is severe, it is necessary to describe in what sense these terms are to be used here. In the *mild* class may be grouped cases showing tachycardia without obvious heart defect; those showing mitral incompetence with only moderate enlargement of the left ventricle; and those showing an apical mid-diastolic bruit with or without a mitral regurgitation of moderate degree. In the *severe* group may be included hearts that have suffered from serious pericarditis (and seldom is it anything less than serious), and those showing mitral incompetence with considerable ventricular enlargement (the apex-beat being an inch or more outside the nipple line), or complicated by the presence of aortic regurgitation or pericardial adhesions. Mitral stenosis, fully developed, is a rarity in childhood; it must be classed amongst the severe cases.

Liability to Fresh Rheumatism and Carditis

It is agreed that juvenile rheumatism is overwhelmingly a disease of hospital, as opposed to private consulting, practice; and environmental factors play so great a part in its production (or unmasking) that we can only act on the assumption that no rheumatic child, living in its own home and attending compulsorily an elementary day-school, is ever free of the danger of relapse. Nor, unfortunately, will prolonged sojourn in ideal surroundings away from home ensure it against serious relapses on its return to its original environment. But although this is undoubtedly true, experience teaches us that there are large numbers of rheumatic children in whom the outlook is quite favourable. To what proportion of the whole rheumatic child population this applies depends on whether we include such early and slight cases as are seen in a rheumatism supervisory centre or out-patient department, or think only in terms of rheumatic in-patients; for it is the early and slight cases that do well, and the severe and advanced cases that do badly. Nor is this altogether the trite saying that at first glance it appears to be, for it connotes that it is not as a rule the cases in the mild group which deteriorate to become the cases of the severe group. For some years now it has been my experience that when a really severe case of rheumatic heart disease, the so-called cardiac cripple, comes under observation it is rarely a child whom one has had under care previously; on the contrary, it is nearly always the case that such a child comes first under observation with its heart irreparably damaged.

MILD GROUP

Supervising a large number of rheumatic children whose hearts are unaffected or only slightly diseased, it is gratifying to watch how well most of them do. It is exceptional for them to suffer from such relapses as require in-patient treatment; and it is still rarer for them to develop serious heart disease. In a few instances aortic regurgitation may develop, often insidiously; and occasionally the signs of mitral stenosis may supervene, but this lesion may be largely the result of healing rather than fresh inflammatory processes. In children who have been through one or two attacks of rheumatism (in-patient type) without developing persistent heart disease the outlook is likewise good, and it is uncommon for them to acquire such heart trouble in any further relapses which they may have. Personally, I think too that in these early cases the enucleation of septic tonsils has its best chance to safeguard rheumatic children from the more serious forms of their disease. The operation will not necessarily prevent reinfections set up by epidemic hæmolytic streptococcal sore throats, since in these the lateral walls of the pharynx may be severely attacked; but in my opinion it prevents the spontaneous attacks of tonsillitis to which rheumatic children are so prone, and renders carditis less frequent and convalescence cleaner and less prolonged. In this large group of rheumatic children, with at most only the milder form of heart disease as defined above, the outlook is favourable, and it is to be hoped that the supervision and periodic re-examination given at a rheumatism centre are factors in producing this happy result. They do quite well remaining at home and attending school. For the worst of them the schools for physically defective children are invaluable; partly owing to their own régime, partly owing to the escape from the harmful effects of compulsory attendance at an ordinary elementary school. Special care should be taken of the children during the winter months and after epidemic catarrhs, scarlatina, and diphtheria. Holidays should be spent when possible with relatives in the country rather than at convalescent or holiday homes, which are rarely suitable for rheumatic children.

SEVERE GROUP

In the class with severe heart disease the outlook is, as might be expected, much worse than in the

* Previous articles in this series were General Principles by Dr. Robert Hutchison, March 31st Prognosis in Gall-bladder Disease by Prof. D. P. D. Wilkie, April 7th; Prognosis of Diabetes in Children by Dr. R. D. Lawrence, April 14th; Tuberculous Laryngitis by Mr. Harold Barwell, April 21st; Prognosis in Enlargement of the Prostate by Prof. C. A. Pannett, April 28th; and Prognosis in Eczema by Dr. Henry MacCormac May 5th.

group already described. Compared with the milder group they are still more prone to reinfections; such relapses rarely fail to affect the heart, and often fresh carditis is almost the sole feature of the reinfection. In addition, in the worst cases, the heart deteriorates insidiously between the obvious recrudescences. Epidemic catarrhs frequently set up serious carditis, which is one reason against massing such children together for treatment. Tonsillectomy, although it may lead to improved general health, is far less successful in preventing fresh attacks of carditis than in the milder and earlier cases.

In these two groups of rheumatic children, the mild and severely affected, the outlook is very different. In both groups there are exceptions. In the second group there are not a few instances in which the tendency to relapse subsides, and the ultimate result is more satisfactory than could have been anticipated. In the milder group the number of exceptions is small, and it is rare to watch this type of case go steadily to the bad.

Static Cases

Fortunately there are many children who, although acquiring heart disease in an early attack, cease to develop any further attacks. It is not possible to be sure in which instances this will happen; but, very roughly, such a favourable course is predisposed to by good social environment, a quick return to good constitutional health, and absence of tonsillar sepsis. In these circumstances the youth of the patient, combined with the freedom of the coronary arteries from disease, tend to make the myocardial compensation extraordinarily efficient and capable of carrying on without trouble to late middle age or longer. In about one-quarter of the cases of established mitral regurgitation of mild type, the heart will make a complete recovery within five years. Aortic regurgitation, once established, is permanent.

Fatal Cases

Deaths during childhood are rare in acute rheumatism. Occasionally the infection, even a first attack, will overwhelm a child, and pericarditis may kill even in a few days. In another group the fatal issue can be long foretold. Such children usually show severe pericardial adhesions, and as the years pass the child's periods in hospital become more prolonged and its times at home shorter, until somewhere between the ages of 12 and 18 renewed carditis causes death. I have known several such children to fall down dead although not thought to be in any particular danger at that moment.

In a third group the outlook is much more uncertain. The child, who has severe heart disease and usually a history of pericarditis, develops relapse after relapse; and then unexpectedly an attack develops which gets altogether out of hand, and after a long spell of fever the child succumbs. Subcutaneous nodules may be a feature in such a case, and pericarditis is almost invariably present, although, owing to repeated past attacks, the pericardium is so abnormal that no friction may be audible. Such cases deserve the clinical title of malignant rheumatic carditis; true pathological malignant infection, supervening on a rheumatic valvulitis, is a rare fatal sequence in childhood.

REGINALD MILLER, M.D., F.R.C.P.
Physician, and Physician in Charge of the Rheumatism Supervisory Centre, Paddington Green Children's Hospital; Physician, St. Mary's Hospital.

THE PREVENTIVE ASPECTS OF MEDICINE

A Series of Lectures in progress at King's College Hospital Medical School

XXV.—PUBLIC AGENCIES WHICH EXIST FOR THE PREVENTION OF DISEASE

(*Concluded from p. 1247*)

The Health of Children and of Expectant, Parturient, and Nursing Mothers

THE most remarkable development in public health work this century has been the establishment of the maternity and child welfare and the school medical services. So far as the reduction of infantile mortality is concerned, the former has scored a great success. A rate of infantile mortality in England and Wales of 132 deaths per 1000 births 30 years ago is now, in 1933, only 64. There are, however, disappointments; one is that maternal mortality is still far too high and shows little tendency to reduction, and another is that neonatal mortality (deaths under one month) is almost as intractable. The local authorities who administer these services may be either the county councils or the district councils and sometimes a district council administers the maternity and child welfare service and the county council, the school medical service. The latter is always, however, controlled by the education authority of the area, which may be the county or the district council. county boroughs, of course, administer both services.

An important part in the supervision of the welfare of expectant and parturient mothers is exercised by midwives, who, in some parts of the country, are responsible for 80 per cent. or even 90 per cent. of the deliveries. The work of the midwives is supervised by inspectors of midwives appointed by the local supervising authorities under the Midwives Acts—i.e., the county and county borough councils and a few of the largest district authorities.

The Central Midwives Board make rules for regulating the conduct of midwives and any serious breach of the rules is reported to the Board by the local supervising authority. The case is heard by the Board and the name of the midwife may be removed from the roll. Under the rules of the Board the midwife must summon a doctor in the event of certain specified complications arising or if progress is unsatisfactory. In these circumstances the local supervising authority pay the doctor's fee in accordance with a scale prescribed by the Ministry of Health. The local supervising authorities are responsible for prosecuting at the local police-court any uncertified person who delivers women in childbirth except in emergency or under the personal direction and supervision of a registered medical practitioner.

For the purpose of reducing maternal mortality and morbidity, most maternity and child welfare authorities now provide antenatal clinics, maternity homes or hospitals, and postnatal clinics. They supply "home helps" to assist in the domestic work of the house during the mother's confinement. Sterilised dressings, extra nourishment for necessitous expectant and nursing mothers, provision of the midwife's fee in cases of necessity, services of a consulting obstetrician and bacteriologist, particularly in cases of puerperal pyrexia or puerperal fever, hospital treatment or home nursing for puerperal fever or pyrexia or ophthalmia neonatorum are also provided. In fact, there is complete provision for

the welfare of expectant, parturient, and nursing mothers.

Though it has often been discussed there is no compulsory notification of pregnancy, though, in a few places, there is a scheme of voluntary notification by a midwife. In practice, most expectant mothers of the class which needs help from a local authority notify themselves by attending the local authority's antenatal clinic or by letting the health visitor know when she happens to be in the vicinity. But with regard to the fact of birth, there is compulsory notification within 36 hours of its occurrence to the medical officer of health, and this is in addition to registration within six weeks of birth by the registrar of births.

This notification has been obligatory since 1915, and imposes the duty not only upon the attendant at the birth but also on other persons present in the house. The purpose of the notification is to enable the health visitor who receives the notification from the medical officer of health to know where her services are required. Her duty is to visit the mother and to give her such advice as is necessary with regard to the upbringing of the child. She visits at regular intervals up to the end of the second year, and in many areas until the child is 5 years of age or has started school and comes under the medical supervision of the school medical service.

The maternity and child welfare authorities also provide infant welfare centres to which mothers bring their children for regular weighing and inspection by a doctor. These centres are not for sick children but for the purpose of keeping healthy children healthy. If they are sick they are referred to a private doctor or to a dispensary or hospital.

There are now 2783 infant welfare centres in England and Wales. Free milk is provided for necessitous children and dried milk is often sold at cost price. The main function of these centres is educational and, in addition to the individual instruction of the mothers, class teaching and lectures are given. There is a home nursing service in connexion with most maternity and child welfare schemes. It is generally given by district nurses and is available for cases of measles, whooping-cough, epidemic diarrhœa, and other specified conditions.

THE SCHOOL MEDICAL SERVICE

The school medical service had its origin in 1907, though Bradford, London, and other places had started such a service a little earlier. It affords the only example of routine medical inspection of a definite and important section of the community. All elementary school-children are subjected to routine medical inspections at entrance to school, at age 8, and at age 12. In London there are four routine inspections, at entrance, at ages 7 and 11, and just before the child leaves school at the age of 14 years.

In addition, the children are examined by a *school nurse*, primarily to ensure cleanliness of the head and body, two or three times a year. She notes any abnormality and refers such cases to the school doctor for special examination. Some 18 per cent. of the children are found, at routine medical inspections, to require treatment for some disease or defect apart from dental caries or lack of cleanliness.

School clinics.—It was soon found that facilities for treatment, either by private doctors or at hospitals, were inadequate, and these clinics were therefore established, of which there are now 1855. They deal mainly with minor ailments (impetigo, sore eyes, and so forth), prescription of spectacles, removal of adenoids and enlarged tonsils, ionisation treatment of otorrhœa, and X ray treatment of ringworm. The children are also inspected regularly by dentists, and dental treatment is afforded at the clinics. At some clinics orthodontic treatment is provided. A small charge is made for treatment (except for the prescription of spectacles) at school clinics, but it is remitted in necessitous cases.

The maternity and child welfare and school medical services also provide an orthopædic service with a view to the prevention of crippling. This includes, in most areas, hospital treatment and the provision of orthopædic clinics where treatment is given by massage, electrical treatment, and remedial exercise.

Most school medical authorities also provide special clinics for rheumatism. All cases of rheumatism, chorea, and rheumatic carditis are kept under close supervision, and, where necessary, hospital treatment is arranged.

Though the above is a broad outline of the duties of a school medical department, it carries out many other functions of a preventive character. For example, questions of school lighting and ventilation are considered, open-air schools are provided for the debilitated, and sight-saving classes for myopes and others who are partially blind. There is also a highly developed system of physical training. Necessitous school-children receive free meals in school and there are many voluntary milk clubs. There is also medical inspection in secondary schools. There can be no doubt that the school medical service is a most potent agency for improving the national physique.

Control of Tuberculosis and Venereal Diseases

Prior to the introduction of the National Health Insurance scheme in 1911 the efforts of public health authorities to deal with *tuberculosis* had been confined to notification in a few areas and to the provision of a few beds. There were, however, many cases of tuberculosis in the poor-law hospitals or in the sick wards of the workhouses. It was recognised that tuberculosis would be a serious drain on the finances of any insurance scheme which provided payment during incapacity for work and a special benefit called "sanatorium" benefit was provided in the Act. A committee was appointed under the chairmanship of the present Lord Astor to advise the government on what measures should be taken to combat this disease.

This committee recommended that an organisation should be set up which would deal with all cases of tuberculosis independently of whether they were insured under the National Health Insurance scheme or not, though, in fact, the arrangements for the treatment of the insured in sanatoria and tuberculosis hospitals remained under the Insurance Committees until 1921. To put it in the words of the committee, the scheme is intended—

"to complete existing public health administration in respect of tuberculosis, and is based on the establishment and equipment of two units related to the general public health and medical work carried on by the medical officers of health . . . and working in harmony with the general practitioner. The first unit consists of the tuberculosis dispensary. . . . The second unit consists of the sanatoria, hospitals, &c., in which institutional treatment is given. . . . The committee are of opinion that the tuberculosis dispensary should be the common centre for the diagnosis and for the organisation of treatment of tuberculosis in each area, at which the various bodies and persons connected with the campaign against tuberculosis will be brought together. The aim should be that no single case of tuberculosis should remain uncared for in the community, and that whatever services the scheme provides should be available for all cases of the disease. Next to the tuberculosis dispensary should stand the second unit, consisting of a system of sanatoria, hospitals, farm colonies, open-air schools, &c. The tuberculosis dispensary should be linked up to these institutions, for which it will act as a clearing-house."

The dispensary acts as a receiving station and centre of diagnosis and a clearing station and centre of observation. It is also the place at or from which contacts are examined and the centre for after-care. The dispensaries fulfil a most useful function, and in

some areas as many as 80 per cent. of the notified cases of tuberculosis are diagnosed at the dispensaries before the notification is sent in, as most suspected cases are sent there by their private or panel practitioners; other cases are discovered as a result of the examination of contacts by the tuberculosis officer.

The total number of beds in sanatoria and hospitals now provided by local authorities or paid for by them in voluntary sanatoria or hospitals is 26,373. At tuberculosis dispensaries 143,531 new cases were examined in 1932, including 48,531 contacts, and the total attendances were 782,602.

The authorities which administer the anti-tuberculosis scheme, as also the venereal diseases scheme, are the county councils and the county borough councils.

Mention may be made here of *bovine tuberculosis* which, it is estimated, causes 2000 human deaths a year. Tuberculosis is very prevalent amongst the cows of this country and some 10 per cent. of the churns of milk arriving in our great cities contain living tubercle bacilli, though much of it is heat-treated before sale to the public. When an urban medical officer of health has ascertained by the biological test that milk is tuberculous, he notifies the medical officer of health of the county of production. The latter then sends a veterinary inspector to examine the herd, and he has power to order the slaughter of any tuberculous animal he may discover. The farmer receives compensation for the loss of his cow.

The Tuberculosis Order requires a farmer to notify the local authority under the Contagious Diseases of Animals Acts when he suspects that one of his cows is tuberculous, and it is an offence for him to sell milk which he knows to be tuberculous.

The *venereal diseases scheme* was inaugurated in 1917 and followed the recommendations of the Royal Commission which had reported in the previous year. The war had brought into prominence the importance of taking every possible step to combat the ravages of these diseases and urgent action was essential. The essence of the scheme is the provision of clinics at which free treatment is given under confidential conditions to all who apply. At first the clinics were all at voluntary hospitals, but during recent years a number of ad-hoc clinics in separate buildings have been provided by certain local authorities and they have been very largely attended. The total number of clinics in England and Wales is now 177, and in 1932 50,824 new cases of venereal disease were treated, 31,125 cases of non-venereal disease came for examination, and the total attendances numbered 2,984,270.

Under this scheme in-patient treatment is provided where necessary and pathological examinations are made, free of charge, of specimens sent by private practitioners. Approved private practitioners—that is, those who have had special experience in intravenous medication—are also supplied free of charge with arsenobenzol preparations for use in the treatment of their private patients.

National Health Insurance Scheme

The preamble to the National Health Insurance Act of 1911 states it is "an Act to provide for insurance against loss of health and for the prevention and cure of sickness," &c.

There are many who think that its use as an instrument for the prevention of disease has not been great; but a system of capitation payment for medical attendance should, in theory at all events, have been the very greatest incentive to the practice of preventive medicine on a broad scale. There are 16,010,000 insured persons in England and Wales and some 16,780 practitioners engaged in health insurance work, and the day by day inculcation into their patients individually, wherever this is appropriate, of what they should do to prevent a return of the illness for which they have consulted their doctor should be of inestimable value in the promotion of public health. Certain panel practitioners have held meetings in halls hired by the Insurance Committee to which all their panel patients have been invited, and have addressed them on the subject of the prevention of ill-health. The local administration of the National Health Insurance Acts is in the hands of the Insurance Committees, which include in their membership representatives of approved societies, the insured persons, the doctors, and the county or county borough council as the case may be. Each county and county borough has its own insurance committee.

Control of Industrial Diseases

Beyond the inspection of workshops and workplaces by officers of the local sanitary authority, the "public agency" for dealing with the hygiene of factories and the control of industrial diseases is the Home Office, which acts through factory inspectors, factory surgeons, and a central medical staff. Factory surgeons examine juveniles on their entrance to factory life and reject them if they are unfit. It sometimes happens that dental or other treatment has been persistently refused while a boy is at school, but as soon as the parents learn that the factory surgeon will not pass him until the treatment is obtained, steps are at once taken to get it.

Cases of anthrax, lead, phosphorus, arsenical or mercurial poisoning and other industrial diseases coming to the notice of a practitioner must be notified to the chief inspector of factories at the Home Office.

General Hospital Provision

It is now an important part of the work of the county and county borough councils to administer the medical services of the former poor-law guardians. These include the management of hospitals and of sick beds in poor-law institutions and the control of the district medical service. Up to now their outlook has been largely confined to the curative side, but there is much scope for the exercise of preventive work which no doubt will be developed now that they are under the control of the large public health authorities.

In this connexion it must be remembered that the cure of a lesser ailment, which would otherwise develop into a major or even fatal one, is an important function of preventive medicine. The efficient treatment of fractures and other orthopædic conditions so that the patient can be returned to industry is essentially practical preventive medicine.

Mental Ill-health

Until comparatively recently mental hospitals were called "asylums" and their main function was the incarceration of those from whom the community needed protection. The cure and reinstatement in the community of those suffering from mental breakdown is attracting more and more attention. Recently the prevention of mental breakdown has occupied the attention of statesmen and others, and under the Mental Treatment Act, 1930, the counties and county boroughs are empowered to establish out-patient centres where patients suffering from mental illness may receive appropriate advice in the hope that a complete mental breakdown may be avoided. Provision is also made for in-patient treatment for a period without the need for certification as a lunatic. With regard to children, child guidance clinics are being established to give advice concerning maladjustment.

Prevention of Blindness

During recent years there has been a considerable reduction in the number of blind children. This is mainly due to the efforts which have been made by the maternity and child welfare authorities to prevent blindness resulting from ophthalmia neonatorum.

Under the Public Health Act, 1925, county and county borough councils are authorised to make such arrangements as they think desirable for assisting in the prevention of blindness, and some have established clinics for the purpose of advising persons who are blind or nearly blind as to what can be done to restore their sight.

Medical Research

The propelling force in advances in preventive, as in curative medicine, is research. The Local Government Board had a small sum available for research, but it was not until 1912 that a definite public agency charged with the duty of medical research was established. Its inauguration followed a provision in the National Health Insurance Act, 1911, to the effect that one penny per annum for every insured person was to be devoted to medical research. As a result of this the Medical Research Committee, now the Medical Research Council, came into being and the funds placed at its disposal by Parliament are now £139,000 a year.

Education of the Public

It will have been gathered from the above that public agencies for the prevention of disease have been generously provided. Some, like the improvement of environmental conditions, operate on all alike, though an appreciation by the public of their purpose would make them even more effective. For example, building by-laws require facilities to be provided for ventilation, yet the ignorant can render the by-law nugatory by stopping up the fireplace or the ventilator if they do not realise the importance of ventilation.

But many of the public agencies mentioned above cannot come into operation until the persons for whom they are provided apply for their assistance. For example, the tuberculosis dispensary organisation is useless if a tuberculous patient plies himself with patent cough medicines for months and only goes to his doctor or to the dispensary when the disease is already advanced. Again, the provision of hospital accommodation for measles is useless if the public regard measles as a trivial disease, wilfully expose their children to it so as to "get it over," and seek no medical advice until the patient is moribund.

Preventive medicine is only successful when it is in step with public opinion; but when public opinion is ready to accept a state or municipal service it should be there ready to hand. For these and other reasons representatives of the Society of Medical Officers of Health waited upon Mr. Neville Chamberlain, then Minister of Health, in 1924, and urged upon him the desirability of authorising health authorities to undertake educational work in their area by arranging for information to be supplied on questions relating to health or disease and for the delivery of lectures and the display of pictures in which such questions are dealt with. He acceded to this request and the necessary legislation for the provinces was included in the Public Health Act of 1925. Similar powers were given to London in the following year. This power, if properly used, should be of considerable value in promoting the public health. There is much knowledge with regard to healthy living which the public are anxious to learn. They read with avidity the advertisements of the vendors of patent medicines. It has been shown by the attendances at health exhibitions, health lectures, and at exhibitions of cinema films on health subjects that they are equally anxious to learn all that a local health authority is prepared to teach them, provided, of course, that it is put in an attractive way.

Conclusion

The above is a very brief outline of the work of public agencies for the prevention of disease. The tendency is for them to grow still further; but for even the present agencies to be fully effective the increasing coöperation of the public is essential. Progress in some directions, for example dental hygiene, is slow, but it is nevertheless sure. There is now a large cohort of persons, backed by all the power of the State, directly concerned in the prevention of disease. The results, though not uniformly successful, have been remarkable, and there is no doubt that as time goes on preventable illness and premature deaths will still further diminish.

W. ALLEN DALEY, M.D., M.R.C.P., D.P.H.
Principal Medical Officer, Public Health Department, London County Council.[1]

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Lt. J. C. Gent is promoted to the rank of Surg. Lt.-Comdr.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt.-Comdr. T. C. Stevenson to *Effingham*.

Surg.-Lts. G. C. Martin and S. G. Suggit to *Rodney*; W. M. MacGregor and G. F. Jones to *Malaya*; G. H. C. R. Critien to *Excellent*, and J. O. Clyde to *Effingham*.

Proby. Surg. Sub-Lt. R. J. Carr to be Surg. Sub-Lt.

The following appts. are notified: Surg. Comdr. T. W. Drummond to *Malaya*; Surg. Lt.-Comdr. A. H. Shellswell to *Effingham*.

ROYAL ARMY MEDICAL CORPS

Lt.-Col. A. S. Littlejohns retires on retd. pay.

Maj. R. W. Vint to be Lt.-Col.

The undermentioned Capts. to be Majs. (tempy. commns.): J. M. Pinkerton, J. B. Woodrow, J. D. C. Swan, and W. Parsons.

Lts. to be Capts.: J. R. Tobin, J. E. Moody, S. Griffin, D. K. Weston, and J. Davidson.

TERRITORIAL ARMY

Maj. W. W. MacNaught (Maj. Res. of Off.) resigns his commn. in the T.A.

Maj. W. McK. H. McCullagh to be Lt.-Col. and to comd. the 13th (4th Lond.) Gen. Hosp.

Maj. F. G. Widgery from 66th (S. Midland) Fd. Bde., R.A., to be Maj. with pay and allowances of a Capt.

E. A. Cormack, late Cadet Serjt., Edinburgh Univ. Contgt., Sen. Div., O.T.C., to be Lt.

INDIAN MEDICAL SERVICE

The prob. appts. of the undermentioned officers are confirmed: W. J. Moody, A. E. Kingston, B. A. Porritt, J. M. Sclater, J. D. Murdoch, C. F. Garfit, D. K. L. Lindsay, D. R. Tweedie, A. T. Andreasen, W. S. Morgan, M. S. Purvis, M. E. Kirwan, G. S. N. Hughes, J. W. Richmond, and A. D. Barber.

The undermentioned officers retire: Lt.-Col. (Bt. Col.) J. McPherson and Lt.-Col. V. N. Whitamore.

ROYAL AIR FORCE

Flight-Lt. E. A. Gudgeon is transferred to the Reserve, Class D.

RESERVE OF AIR FORCE OFFICERS

Flight-Lt. W. Heron relinquishes his commission on completion of service.

[1] In order to comply with the Council's Standing Orders it is necessary to state that the London County Council accept no responsibility for the author's opinions or conclusions.

SPECIAL ARTICLES

GENERAL MEDICAL COUNCIL

SUMMER SESSION, MAY 29TH–JUNE 2ND, 1934

The Pharmacopœia

Sir Henry Dale, introducing the report of the Pharmacopœia Committee, stated that 1407 copies of the British Pharmacopœia 1932, had been sold since November, bringing the total number of copies sold to date to 34,502. The Committee had received a second report from the Pharmacopœia Commission 1933–36, reporting that good progress had been made with the Addendum to the British Pharmacopœia 1932, which it was proposed to issue towards the end of 1936. This intermediate Addendum, said Sir Henry, was a new policy and would provide not only a convenient half-way stage between one Pharmacopœia and the next but also an opportunity to make such additions and adjustments as might be desirable in order to secure uniformity with the 11th United States Pharmacopœia which would be published in 1935. Active work was being carried on in the laboratory which the Council had provided, not only in preparation for the Addendum but also in dealing with the many helpful comments and criticisms which had been proferred on the 1932 issue. The Commission had given careful consideration to the newer remedies which were coming into general use, and monographs on a number of new chemical substances and preparations were under consideration by the Committee. It is obvious that every issue must contain as complete accounts as possible of vitamins and antitoxins, sera, and other animal products. Another problem before the Committee was the very large number of remedies which are virtually monopolies and which are continually taking their place in the practitioner's armamentarium. A recent meeting of the Committee had considered whether such substances ought or ought not to be included in the Pharmacopœia or in a companion volume, and a subcommittee had been appointed to discuss the matter. The adoption of the report was seconded by Dr. J. W. Bone and was carried unanimously.

Medical Education and Examination

The Examination Committee presented a report on the pre-registration examination and length of the curriculum, and on the English examination reports and visitations. The Education Committee also had two reports, one on the curriculum and the other on various matters referred to it. Prof. J. B. Leathes, introducing this report, pointed out the valuable data which were embodied in the tables showing the requirements of the licensing bodies in regard to the medical curriculum. These had been set forth in three groups: those licensing bodies requiring at least 5 years; those requiring more than 5 years; and the London schools. Three years for clinical study were now required by all the licensing bodies, and the scheme of a pre-registration examination in chemistry and physics had been followed by most of the bodies, particularly those who did not teach. The bodies which provided instruction, however, were less willing to relinquish the teaching of physics and chemistry to secondary schools and retained control of these subjects to some extent. The result had been an increase in the minimum duration of the curriculum, but at the same time the scientific foundations of medical education had become more secure, though possibly at some sacrifice to school training in Letters.

Another point on which the Council had laid much stress was the abolition of any separation between clinical and pre-clinical study. Courses in applied anatomy were now given in almost all schools, and courses in applied physiology also, though not so consistently. It was the experience of a number of teachers that students were far more eager to learn these subjects during their clinical years, when they were in a position to appreciate the value of them. Courses in radiology were given in most places in the final year, though some teaching bodies did not require special evidence of instruction, as the use of radiograms was so universal in medicine and surgery that examination in these subjects would reveal the ability of a student to interpret X ray findings.

"EVIDENCE OF GENERAL KNOWLEDGE"

The attention of the Committee had been drawn, said Prof. Leathes, to the fact that religious knowledge, though recognised by many university and licensing bodies as a subject of general education, was not so recognised by the Council. The Committee recommended that no action be taken in this matter.

Prof. Langdon Brown protested at this decision; he thought it was a great pity that it should go out from the Council that knowledge of Biblical history was not regarded as evidence of general knowledge. The University of Cambridge, he said, had drawn his attention to the matter and he asked on what grounds the Committee had come to this decision.

The Conjoint Examining Board, Prof. Leathes added, had addressed the Committee in November, 1933, drawing their attention to the variation in the scope and standard required in the London Matriculation, Oxford and Cambridge School Certificate, and College of Preceptors' Senior Certificate (Credit Standard) Examinations. The Examining Board thought it desirable that the whole of the preliminary examination should be passed on one occasion, and that it should consist of English, another language, any three of the following subjects, provided that one were taken from each section: (1) arithmetic, algebra, geometry; (2) zoology, chemistry, physics, and one of the following subjects: Latin, Greek, French, Spanish, Italian, history, and geography. They therefore thought it desirable that the present credit standard of the College of Preceptors be abolished and that an ordinary Senior Certificate of the College be accepted, provided that it was specially endorsed to show an aggregate of not less than 40 per cent. with a standard of not less than 30 per cent. in any subject. The Education Committee of the General Medical Council had agreed that these proposals would provide a preliminary examination that would be satisfactory evidence of general education.

Sir Henry Brackenbury dissented from this conclusion of the Committee. He would be willing to accept the words "A less unsatisfactory evidence," but he could not regard any preliminary examination in which mathematics was not essential as satisfactory evidence of fitness for medical study. He asked how it was possible for anyone to pursue scientific medical studies to the degree necessary for the public protection without, for instance, any knowledge of algebra.

Mr. Bishop Harman agreed, and pointed out that even the Examining Board had only used the expression, "More satisfactory evidence."

Dr. Letheby Tidy pointed out that a number of the licensing bodies did not require mathematics for

examination for their matriculation, and named the Universities of Oxford, Cambridge, Manchester, Liverpool, Sheffield, Birmingham, and Bristol. It could not logically be said, he argued, that the General Medical Council considered mathematics necessary if it accepted the examinations of these bodies. Moreover, mathematics was often a matter of very great difficulty to certain individuals, individuals who did not necessarily make bad doctors.

Prof. J. S. B. Stopford said that there was a misunderstanding: the University might not demand mathematics for its entrance, but there were faculty requirements over and above those of the University as a whole. In Manchester English, Latin, and mathematics were always compulsory for the faculty of medicine.

Prof. E. Fawcett said that Bristol from the start had demanded mathematics up to matriculation standard for entry to the faculty of medicine though not to the faculty of arts.

Mr. R. J. Johnstone suggested that the Report be amended to read "more satisfactory," and Prof. Leathes accepted this suggestion, remarking, however, that the indirect attack on mathematics through physics might be just as good an education as the direct attack which some people found very difficult.

TUBERCULOSIS

The Education Committee had suggested in May, 1933, that they should inquire of the Licensing Bodies if they were satisfied that candidates had sufficient opportunity for studying the early stages of tuberculosis. All the licensing bodies had now replied that they were satisfied, with the exception of Birmingham and Cambridge.

Prof. Langdon Brown pointed out that at Cambridge candidates had not been taught that part of the subject within the bounds of the University, and the examiners had noticed a great variation among different candidates as to the knowledge of physical signs. They had correlated this with the varying opportunities given to the men to attend tuberculosis departments and institutions.

Sir George Newman remarked how satisfactory it was to get such a reply, as there had been widespread criticism throughout the country of the inability of medical schools to teach either maternity or tuberculosis. It was most gratifying to learn that there was in fact no difficulty, with the exception of Birmingham. He wondered what was the unique trouble of this university.

Prof. Gamgee said that the Report from Birmingham had given a wholly incorrect impression. There were plenty of cases in the out-patient department for the teaching of early tuberculosis and he would ask the University to send a supplementary report.

New Penal Cases—(*Concluded*)

ALLEGED FALSE REPRESENTATION OF FEES

The Case of Anczel Freitag, registered as of 27, Selhurst-road, South Norwood, S.E.25, L.M.S.S.A. Lond. 1929, who had been summoned to appear before the Council on the following charge:—

"That being a registered medical practitioner, you on Dec. 21st, 1932, in reply to an inquiry by the County Borough of Croydon Insurance Committee, did falsely represent to such committee that you had been paid the several sums by the several patients as set out: Edith Goldsmith, 3*s*. 6*d*.; Albert Moon, 3*s*. 6*d*.; Nellie Moon, 7*s*. 6*d*.; Jessie Plackett, 2*s*. 6*d*.; whereas in fact you had been paid the several sums by the several patients as set out: Edith Goldsmith, £1 11*s*. 6*d*. (being nine visits at 3*s*. 6*d*. each); Albert Moon, £17 6*s*. 6*d*.; Nellie Moon, 10*s*. 6*d*.; Jessie Plackett, 7*s*. 6*d*. Such representation was made by you improperly and fraudulently with the intent and for the purpose that the said committee when making the adjustment of payments due to you for your remuneration in respect of the treatment of insured persons under the National Health Insurance Acts should only deduct the several amounts set out by you in your letter of Dec. 21st, 1932. And that in relation thereto you have been guilty of infamous conduct in a professional respect."

The case was reported to the Council by the Minister of Health.

Mr. Hempson, solicitor to the Medical Defence Union, accompanied Dr. Freitag.

Mr. Hempson objected to the consideration of this matter by the Council at all, as the offence was a crime and a man accused of a criminal offence was entitled to be tried by jury under the rigid procedure of the courts. He suggested that the charge was an abuse of the Council's process by the Ministry of Health, which had its own appropriate remedy by inquiry.

Mr. Harper argued that the jurisdiction of the Council was to deal with the Register regardless of what happened outside.

The Council deliberated on the submission in camera and over-ruled it. Mr. Harper then addressed the Council.

Mr. Albert Moon, who is blind and partially paralysed, gave evidence; Mr. Harper read his statutory declaration and Mr. Hempson cross-examined him as to his attendances. He had paid respondent at each attendance; he had never had a receipt, nor had respondent made any record. He denied that the dispenser had told him the apparatus was out of order in December, 1932. His recollections were very hazy, he said. He had received a cheque for £17 odd from the Insurance Committee in repayment of fees.

Mrs. Moon gave confirmatory evidence.

Mr. Hempson objected to the admission of statutory declarations from persons not called as witnesses, and was over-ruled. Mr. Harper read a declaration from Edith Goldsmith, but was not allowed to put in evidence the finding of the Insurance Committee. The Minister, he said, had ordered respondent to refund sums to patients and had fined him £15.

Dr. Freitag gave evidence on his own behalf, agreeing that Moon and Goldsmith had been panel patients to whom he had given electrical treatment. He had sent in forms G.P. 45 in respect of them in 1931, showing that he was charging them fees for specialist services as set forth in the regulations. In 1929 he had made a similar claim, and simple sunlight treatment had been regarded by the committee as of specialist character. Not till 13 months after the forms had been sent in had he received the decision of the committee. He had given diathermy and faradism; and he produced his appointment books to show that only 47 treatments had been given. The battery of the faradic apparatus had run out in December, 1932, and had never been renewed, as the patient was not benefiting. Moon had paid 3*s*. 6*d*. on the first occasion, but no more. He produced his cash book in which he recorded all fees paid. He had been satisfied that the treatment was outside the panel service, on account of the 1929 decision. Mrs. Goldsmith had had diathermy and sinusoidal current and had paid 3*s*. 6*d*. the first time only; subsequently the dispenser had given the treatment. The visits were recorded in the appointment book. At the Insurance subcommittee there was

no legal guidance as to rules of evidence and procedure, and accused was not represented by a lawyer. No inquiry at all had been held by the Ministry.

Mr. Harper read the finding of the Insurance Subcommittee to respondent, who recognised it. In reply to the Legal Assessor, he said he had produced his books to the subcommittee; he kept them himself, except for an occasional audit. He had not charged either patient after the first treatment because he had not given personal supervision.

Dr. E. W. Bone asked what the responsible body, the Croydon Insurance Committee, had done on receiving the report of its subcommittee, as this had not been stated. Dr. Freitag replied that they had accepted the report, and Mr. Hempson read the recommendation that respondent be severely censured and that the Ministry should be advised to withhold an appreciable sum from his remuneration. In reply to Sir Robert Bolam, Dr. Freitag said he knew he had a right to appeal but had not appealed because he had been working for his D.M.R.E. and had no time to spare.

Miss E. Pettitt, Dr. Freitag's dispenser, confirmed Dr. Freitag's account of the failure of the apparatus early in December and of the administration by her of treatment to Mrs. Goldsmith, who had never paid witness anything at all and had not seen the doctor privately so as to have an opportunity to pay a fee without witness's knowledge. In reply to Mr. Harper she said she had not given evidence before the subcommittee.

Mr. Hempson addressed the Council, repeating that this inquiry, if not an abuse of the Council's procedure, was at least a matter requiring careful consideration in the interests of the whole profession. Mr. Harper also addressed the Council, which did not find the facts proved to its satisfaction and therefore dismissed the case.

POLICE-COURT AND ASSIZE-COURT CONVICTIONS

The Case of William Graham, registered as of Bridge House, Manor-road, Tynemouth, M.B., B.S. 1923, U.Durh., who had been summoned to appear before the Council on the following charge:—

"That you were at the Newcastle Assizes commencing on Oct. 30th, 1933, convicted of unlawfully killing one William Wood Walton and were fined £100 and ordered to pay the costs of the prosecution."

There was no complainant in this case.

Mr. Graham appeared, accompanied by Mr. Hempson, solicitor.

Mr. Harper, solicitor to the Council, explained that respondent had lost proper control of his motor-car due to sleepiness, and had overtaken a couple of pedestrians on the wrong side of the road and killed one of them. He had shortly before the accident discovered that he was driving on the wrong side of the road at 40 m.p.h., but had continued at that speed, thinking he had shaken off his sleep. No suggestion was made that drink was involved. Mr. Justice Humphreys, in passing sentence, had expressed the view that accused had been punished enough, and should be capable of continuing to live as a good citizen and doctor; he had not seen fit to disqualify the accused from continuing to drive. Mr. Hempson urged that nothing in Mr. Graham's conduct redounded in any way to his discredit as a medical man and a gentleman. He had been exhausted by hard work in his practice and by a number of night calls.

The Council decided not to direct the Registrar to erase Mr. Graham's name.

The Case of James Paton Neilson, registered as of 90, Liverpool-road, Southport, M.B., Ch.B. 1922, U.Glasg., who had been summoned to appear before the Council on the following charge:—

"That you were convicted of the following misdemeanours, viz.: (1) On Dec. 9th, 1929, at Southport County Borough Police-court, of being drunk in charge of a motor-car, and were fined £15 and your licence suspended for 12 months; (2) on Nov. 21st, 1933, at the Lincoln City Police-court, of driving a motor-car whilst under the influence of drink to such an extent as to be incapable of having proper control, and were fined £50 and £3 13*s.* witness allowances, and disqualified for holding or obtaining a licence for five years."

There was no complainant in this case.

Mr. Carthew appeared on behalf of the respondent, instructed by Messrs. Le Brasseur and Oakley, solicitors to the London and Counties Medical Protection Society. Explaining that Dr. Neilson was in Canada, he read a letter from the respondent stating that he had obtained permission to practise in Canada, had started a new life in a lonely and pioneer district, and had already visited many families scattered over a vast area; he expressed deep regret for his "foolish self-indulgence" and requested the Council to accept his assurance of perpetual abstention and good behaviour in future. Mrs. Nora Neilson, respondent's wife, a medical practitioner, testified that at the time of the Lincolnshire incident respondent had been extremely anxious at the non-success of a new practice, and stated that she intended to join her husband with their children when he had established himself. Mr. Carthew read some statutory declarations testifying to the good character of the respondent. The Council decided not to erase Dr. Neilson's name.

The Case of George Francis Donaldson Perrott, registered as of 25, Bromefield, Stanmore, Middlesex, M.R.C.S. Eng. 1928, L.R.C.P. Lond. 1928, who had been summoned to appear before the Council on the following charge:—

"That you were convicted of the following misdemeanours, viz.: (1) On April 13th, 1933, at the Staple Hill, Bristol, Police-court, of being in charge of a motor-car when under the influence of drink to such an extent as to be incapable of having proper control, and were fined £50 and £2 6*s.* costs and your licence suspended for five years; (2) on Nov. 17th, 1933, at the Marylebone Police-court, of being drunk and disorderly, and were fined 10*s.* 6*d.* or seven days' imprisonment."

There was no complainant in this case.

Dr. Perrott was accompanied by Mr. T. Carthew, counsel, instructed by Messrs. Le Brasseur and Oakley, solicitors, on behalf of the London and Counties Medical Protection Society.

Mr. Harper laid the facts before the Council and Mr. Carthew addressed it. After consideration in camera the President pointed out that the respondent had been twice previously before the Council on similar charges. On the first occasion he had promised to abstain from alcohol and had produced satisfactory testimonials at the end of a year's probation. The President continued:—

"Being a medical council, perhaps we are more familiar than an ordinary jury with the difficulties of your case, and we have decided to take a course which we believe to be very much in your interest. We will put you on two years of probation. At the end of one year, we shall expect to have reports on your conduct from persons such as those from whom you have previously submitted testimonials. . . If there should be any further lapse on your part during that time, you will be again summoned to appear before the Council."

Penal Cases Postponed from a Previous Session

The Case of Peter John Gormley (formerly Grimes), registered as of 167, Wigan-road, Ashton-in-Makerfield, Lancs, M.B., B.Ch. 1919, N.U. Irel., who had appeared before the Council at its summer session, 1933, on the charge of having been convicted on two occasions of driving a motor-car whilst under the influence of drink, and of other motoring offences. The Council at that session had postponed judgment for a year subject to the usual proviso that the respondent should within that time give the names of a number of his professional brethren from whom the Council could request a report on his character and conduct in the interval. Mr. Gormley now appeared, and Mr. Harper read a number of letters which showed that his behaviour had been satisfactory in every respect. The Council did not see fit to direct the erasure of his name.

The Case of Victor Cecil Tughan, registered as of 4, Stanton-court, Greenhill, Weymouth, M.R.C.S. Eng. 1925, L.R.C.P. Lond. 1925, who appeared before the Council charged with having been convicted on two occasions of driving a motor-car whilst under the influence of drink. Mr. Tughan should have appeared at the last winter session, but the hearing was adjourned because of his illness. After hearing the Council's solicitor and Mr. Tughan, the Council postponed judgment for six months subject to the usual provisos.

Penal Cases Reported by the Dental Board

In accordance with custom, the Council heard penal cases in public and deliberated on its findings in camera.

The Case of John Holden Beckett, registered as of 10, St. Peter's-road, Leicester, L.D.S. R.C.S. Eng. Mr. Beckett was not present, nor was he represented. He had been twice convicted of travelling on the railway without having paid the fare and with intent to avoid payment thereof. The Dental Board had found the charges proved and had required testimonials, all of which had proved unfavourable or inadequate. The Board had therefore found that his name ought to be erased from the Register. Mr. Harper, the solicitor to the Dental Board, gave the Council some details of the case, and after deliberation in camera the President announced that the Registrar had been directed to erase Mr. Beckett's name from the Dental Register.

The Case of Nathan Moss, registered as of 29, Shoot-up-hill, Cricklewood, London, N.W.2, dentist 1921, who had been found guilty by the Dental Board of advertising for the purpose of promoting his own professional advantage by the issue of circulars, 10,000 of which had been printed and circulated by an addressing firm. He had been warned by the Registrar previously. Mr. Moss appeared, accompanied by Mr. Scott Henderson, counsel, instructed by Messrs. Bulcraig and Davis, solicitors. The Registrar read the report of the Dental Board. Mr. Henderson addressed the Council on Mr. Moss's behalf. He expressed his client's regret, and criticised certain proceedings before the Dental Board and the wording of the charge. He adduced evidence that certain persons there mentioned had been in fact patients of Mr. Moss; and declared that the Dental Board had appeared to accept this evidence. He argued that non-attendance for two or three years could not make a patient a patient no longer.

Mr. Harper addressed the Council and admitted that the circular alleged to have been addressed to Mr. Alfred Smith, one of the persons whose evidence had been heard by the Dental Board, was addressed to "Mr. S. Smith" and might reasonably be supposed to have been intended for Mrs. Sophia Smith, the wife, who was in fact a patient of the practice.

The President, after deliberation in camera, announced that the Council did not see fit to direct the Registrar to erase Mr. Moss's name.

The Case of Lawrence Louis Symmonds, registered as of 58, High-street, Bargoed, Glam., L.D.S. R.C.S. Eng., who had been summoned before the Dental Board on a charge of setting up a dental clinic, with reduced fees, where only himself and his assistants were allowed to treat patients. The conditions of attendance were set forth in a circular which he had handed and sent to various medical practitioners in the attempt to obtain patients. The Dental Board had found him guilty of advertising to attract practice and had recommended the erasure of his name.

Mr. Symmonds appeared in answer to his notice, accompanied by Mr. T. Carthew, counsel, instructed by Messrs. Le Brasseur and Oakley, solicitors, acting on behalf of the London and Counties Medical Protection Society. The Registrar read the notice and Mr. Carthew addressed the Council, saying that Mr. Symmonds had been a "Dentist 1921" before qualifying L.D.S., and had for years had the largest practice in the district. With one exception, he and his assistants had been the only dental surgeons in the neighbourhood; nor were there any other dental clinics. The area was a very poor one, and people could not afford to travel to Cardiff or Newport. Mr. Symmonds had taken responsible advice before opening his clinic, and had written to all the doctors in the neighbourhood asking for an interview, in order to obtain their views. They had all said that some such scheme was badly wanted.

There was no suggestion that the respondent had approached any but doctors; and he had offered to explain the scheme to the Rhondda Valley Medical Association. The scale of fees was not one which offered any profit, and he had refused to do the work for any patient who had not a certificate of poverty from a doctor.

Mr. Harper addressed the Council, and said that other dentists in the district ought, in the opinion of the Dental Board, to have been brought in; even if "only Dentists 1921" they were all dentists. He read certain question and answers from the report of the inquiry before the Board. He argued that the scheme had not been a charitable one, but an attempt to increase respondent's own practice.

The Council decided not to erase the respondent's name from the Register.

LISTER INSTITUTE OF PREVENTIVE MEDICINE

THE 40th annual report of the governing body records the research work in progress in the various departments. We select below from the mass of interesting material notes on a few of the investigations being carried out in the department of bacteriology, serology, and experimental pathology.

Studies on Viruses

Vaccinia.—Continuing his studies on the cultivation of vaccinia virus on cell-free fluid media, Dr. G. H. Eagles has completed a series of passages in which the washed elementary bodies obtained from deposits of

Berkefeld V. filtrates of dermal virus centrifugalised at high speed were used for the initial seeding. "Kidney extract," prepared by grinding, salting, and high-speed centrifugalisation, constituted the culture medium. Seven generations of subculture have been carried through without apparent loss of potency, the final subculture representing a multiplication of 20^7 times the original potency of the seeding as judged by animal titrations.

As in previous series, considerable irregularity was experienced among individual flasks set up at the same time. The few workers in other countries who have attempted the cultivation of vaccinia in cell-free media have not succeeded in securing definite evidence of growth, and in the attempt to reconcile such conflicting results, Dr. Eagles is now, in conjunction with Dr. A. B. Sabin (Fellow, National Research Council, U.S.A.), undertaking a fresh series of experiments and certain possible sources of error are being investigated.

The use of *elementary body suspensions for vaccination against small-pox* is being investigated. These suspensions, derived from filtrates of dermal virus by high-speed centrifugalisation, possess high activity and can be prepared with ease and economy. As they represent the virus in the purest form and are bacteriologically sterile, an investigation is being made of their activity under various conditions of storage.

Dr. C. R. Amies has found that such suspensions, in a medium of simple broth, retain their activity for considerable periods when kept at room temperature and, indeed, for several weeks, at 37°, the survival periods comparing very favourably with those obtained with crude pulp in saline or glycerol saline. At 0° C. the loss of activity is, as might be expected, small.

Dr. Amies has not been able to confirm the claim recently made by Russian workers that vaccinia virus can be readily cultivated in vitro in symbiosis with yeasts.

Dr. M. H. Finkelstein, using a modification of the complement-fixation technique introduced by Mackie and Finkelstein in 1928, has shown that no fixation takes place with hyperimmune sera and material from vaccinia if the elementary bodies are absent.

Varicella and herpes zoster.—Dr. Amies, following up his previous work on varicella, has fully confirmed the finding of elementary bodies in herpes zoster and has obtained pure suspensions of them by high-speed centrifugalisation of the vesicle fluid. Agglutination tests lend further support to the belief that the two viruses are closely related, if not identical. The relationship of fowl-pox to pigeon-pox is being studied by Dr. Finkelstein and the properties of louping-ill virus grown in vitro by Mr. D. W. Henderson.

A virus recovered by Dr. Sabin from a human case of acute ascending myelitis, associated with focal necroses in viscera ("B" virus), has been found to be readily communicable to rabbits, in which an ascending paralysis leading to fatal issue regularly followed an intradermal injection after an interval of some days. These animals, like the original human case, presented necrotic foci in certain viscera similar to those associated with highly virulent vaccinia and herpes infections. The further investigation of this virus from the point of view of possible relationship to the herpetic group of viruses is being actively pursued by Dr. Sabin.

Spore-bearing anaerobes.—Work commenced last year on the antibacterial mechanisms associated with *C. tetani* prophylaxis has been continued.

Experiments on the efficacy of high titre antitoxic sera in protection against *C. tetani* spore infection have shown that such sera only delay the onset of the disease, which later ends fatally. A successful issue may, however, be obtained by repeated intravenous inoculation of antitoxin until the local lesion produced by the activator is no longer effective in maintaining conditions suitable for the reproduction of the organism and the associated toxin production. The survival of spores in such recovered animals is being investigated.

Studies on virulence.—Dr. A. Felix, in collaboration with Miss R. M. Pitt, has studied the relationship between virulence and susceptibility to the action of the "O" antibody working with *B. typhosus*. In experiments with mice it has now been found that highly agglutinable strains of *B. typhosus* are of low virulence, while inagglutinable strains are highly virulent. Both types of strain were carefully tested by all the known methods for detecting "roughness," and were found to be perfectly smooth. There was also no difference in their content of "H" antigen.

The inagglutinability of these strains is strictly a property of the living organisms. The nature of the factor underlying the phenomenon is as yet entirely obscure. The results do not contradict the view that rough forms are non-virulent, but they do indicate that the mere presence of smooth "O" antigen does not completely define virulence. Some obscure property is required to render this antigen resistant to "O" antibody.

RESISTANCE TO INFECTION AND GENETIC CONSTITUTION

Through the kindness of Dr. L. T. Webster, of the Rockefeller Institute, and Prof. J. B. S. Haldane, of University College, selected and pure line races of mice have been obtained, and the breeding of them has been successful enough to permit of the testing of groups of these races for resistance to a variety of infective agents, including *S. typhi murium*, *S. enteritidis*, *M. pneumoniæ*, and the virus of louping-ill. Dr. H. L. Schütze and Dr. Finkelstein, who are conducting these experiments, have already been able to demonstrate very striking differences in the susceptibility of these strains of mice to the test infections selected, and it is hoped in this way to acquire some insight into various processes of immunity.

In the division of protozoology during the year Miss Muriel Robertson, D.Sc., has been concerned with the study of various aspects of the effect of gamma ray irradiation on the growth of *Bodo caudatus*.

(*To be concluded*)

MEDICINE AND THE LAW

Jurisdiction of the G.M.C.

OUR learned contemporary, the *Law Journal*, voices misgivings which have also been expressed elsewhere over the jurisdiction lately asserted by the General Medical Council in a case referred to it by the Minister of Health, and reported on page 1307 of our present issue. In effect, a panel practitioner was accused of a fraud amounting to a misdemeanour, and there was a question which was the proper tribunal, the G.M.C. or a court of law. The local medical service subcommittee had found that the practitioner had offended against the medical benefit regulations. The complaint against him was that he had understated to the Croydon Insurance Committee the fees paid to him by certain panel patients for special treatment. The suggestion was that he planned this alleged

irregularity in order that the committee, when adjusting his remuneration, might make smaller deductions than would otherwise have been made. The Minister of Health fined him £15 on the report of the investigation and, without ordering a disciplinary inquiry under the National Health Insurance Act, sent the case to the General Medical Council. When the Council began the hearing on June 2nd, its jurisdiction was challenged on a preliminary objection on behalf of the respondent doctor. It was urged that he had a right to have this criminal charge of misdemeanour tried in a proper court of law before a jury and upon sworn evidence. The Council overruled the objection, examined the facts, and dismissed the case.

The Council has, of course, a statutory jurisdiction (under Section 29 of the Medical Act) to make due inquiry into an allegation of "infamous conduct in any professional respect," and no one will deny that an allegation of the fraudulent manipulation of accounts as to fees might come within these words in the section. But the authorities who administer the criminal law might well object to the Council assuming an original jurisdiction in every case of alleged felony and misdemeanour where the accused is a doctor. The very idea seems to recall the claim of the mediaeval Church to exercise temporal jurisdiction over its members—a claim which allowed "benefit of clergy" to furnish a simple form of clemency to first offenders. One inevitable question arises: if the Council exercises jurisdiction over the doctor in a charge of fraud, what is the effect on subsequent proceedings in a police-court or at assizes? There is an established rule of the common law that a man may not be twice put in peril for the same offence. The Council may not be within the letter of the rule as a competent tribunal whose acquittal bars any fresh indictment in the same matter. But if, in the recent case dismissed by the Council on June 2nd, fresh criminal proceedings were now instituted elsewhere, there would be a feeling that the spirit of the rule had somehow been broken.

VOLUNTARY HOSPITALS CONFERENCE

A CONFERENCE of voluntary hospitals, convened by the British Hospitals Association and the Incorporated Association of Hospital Officers, was opened on June 13th by H.R.H. The Prince of Wales. The Prince was received by the Lord Mayor, Sir Charles Collett, and Sir Arthur Stanley (President, British Hospitals' Association). After the appropriate presentations had been made, the Prince declared the conference open and a vote of thanks was proposed to him by the Lord Mayor and seconded by the Hon. Arthur Stanley. Owing to the sudden illness of Sir Ernest Morris, a paper by him on "Voluntary Hospitals, Past, Present, and Future," could not be read and the session devoted to the subject was abandoned.

At the session which immediately followed the opening ceremony the chair was taken by Lord Macmillan, chairman of the Hospital for Sick Children, Great Ormond-street, for a discussion on

The Out-patient Department

Lord MACMILLAN said that the out-patients' department presented difficult and important problems. It had two aspects: that of policy and that of method. Under policy came the great question whether the out-patients' department performed the functions it was designed to serve; whether it was attended by the right type of patient, both from the social and medical aspect; whether enough scrutiny was made of those attending; and whether the best possible use was made of the many organisations which had come into being since the hospitals were instituted. That blessed word "coördination" really did stand for something of moment. As to method, the mere mechanical handling of out-patients was difficult. Often the authorities were hampered by accommodation that had been completely outgrown; that was a problem for the architect. Then there was the question how to get patients there at the right time. He himself had an appointment with his dentist at 4 o'clock, but he was quite prepared to study antideluvian journals for some time before being admitted. If the private consultant could not keep precise appointments, what of those handling immense crowds? Waiting was no fault of the staff; none could tell how long a given case would take and no purely mechanical arrangement could be arrived at.

The Earl of ONSLOW, chairman of the Out-patient Committee of King Edward's Hospital Fund for London, opened the discussion. He said that one of the great difficulties of out-patient treatment was that of getting a true picture of the situation. There was really only one substantial complaint: overcrowding. One of its chief causes was the popularity of the hospital. Numbers of patients might just as well go elsewhere and could get the same treatment, often from the same specialists, in clinics provided by the local authorities. A certain amount of waiting was probably unavoidable, but something could be done by time-saving methods and by reducing the number of patients. No hard-and-fast rule could be laid down for every institution, but hospitals could now pool their experience, and the King's Fund had appointed a committee to this end. Undoubtedly old-fashioned and inadequate accommodation had accounted for much difficulty, and much structural alteration could be done at small cost. It was important that out-patient time-tables should be widely and accurately known, so that patients should not arrive far too early in error. Difficulties in the way of introducing an appointment system were the unpunctuality of patients, the necessity of securing a constant stream so that the consultant's time was not wasted, and the complication of unexpectedly short or long cases and the arrival of urgent cases. Moreover, a consultant who had all his patients for the afternoon before him could sift them, so that his assistants saw some while he got on with those reserved to himself and could leave as soon as he had finished. A partial appointment system, however, seemed possible; patients might be summoned in groups or classes at different hours, and appointments might be possible in special departments. Specialists should not have to do their own clerical work. As a counsel of perfection, there seemed much to be said for the British Medical Association's ideal of making the out-patient department purely consultative, but this seemed impracticable. The users of the hospital would object; they would not like asking their doctors for letters thus revealing suspicions of his treatment, and moreover many persons had no regular doctor.

IRELAND

(FROM OUR OWN CORRESPONDENT)

THE HOSPITALS SWEEPSTAKES AND MEDICAL RESEARCH

THE sweepstake on the Derby, which was drawn last week, brought a sum of £519,089 to the Hospitals Fund. The total amount which has been distributed,

or is awaiting distribution, to the hospitals, as the result of the twelve sweepstakes which have been conducted, is £6,897,132. Some months ago the various hospitals which are associated in conducting the sweepstakes, agreed that they would be willing to allot a sum from the proceeds for the endowment of medical research, a method of allotment permitted by the Act of last year. A scheme has now been prepared by a representative expert committee and has been approved by the hospitals committee. The next step is to put it before the Hospitals Commission which advises the Minister as to the distribution of the Hospitals Fund. The details of the scheme are not likely to be made public until the scheme receives the approval of the Hospitals Commission, but it was stated last week that a substantial sum of money will be asked for and that the scheme will include provision for research to be carried out abroad, as well as at home, and by foreigners as well as by citizens of Ireland.

ROYAL COLLEGE OF SURGEONS IN IRELAND

The annual elections at the Royal College of Surgeons in Ireland were held on June 4th. Mr. Seton Pringle has been elected president unopposed, and Mr. Adams A. McConnell, vice-president, also unopposed. Mr. Pringle has been vice-president since 1932. He is visiting surgeon to the Royal City of Dublin Hospital and surgeon to Drumcondra Hospital; he is also honorary lecturer on the pathology of bone in the School of Physic, Trinity College. Mr. Adams McConnell is senior surgeon to the Richmond Hospital, Dublin. He has been a Fellow of the College since 1911.

HEALTH COMMITTEE OF THE LEAGUE OF NATIONS

It is announced that Dr. Denis J. Coffey has been appointed a member of the Health Committee of the League of Nations. Dr. Coffey, who is the first Irish medical man to be appointed to this committee, is president of University College, Dublin, and also president of the Irish Free State Medical Registration Council.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

WATER SHORTAGE IN SCOTLAND

EARLY in the year the Department of Health suggested that the local authorities and other water undertakers should make a survey of their position and prepare plans for effecting economies in consumption and adding to their supplies. On June 4th they issued a second circular enclosing a summary of the Water Supplies (Exceptional Shortage Orders) Act, 1934. It is not in the cities that the greatest trouble will have to be faced. In the counties, when there is little snow in the winter, the wells tend to give out and typhoid fever used to appear regularly. Now typhoid is under better control, but other indirect results may have to be faced. Many of the small burghs are not very well supplied. The tendency in Scotland is to seek out gravitation supplies, and the departmental committee now sitting on the medical services some time ago issued an interim report recommending a survey of the water-supplies. This had been also recommended by the Royal Commission on Housing in 1917; but nothing has been done. The matter is urgent now and the department will have less trouble in rousing the activities of the local authorities. Previous experience would lead one to doubt whether advice to householders is likely to have much effect, but a stringent supervision of meters for "works" and particularly of street fire hose connexions ought to result in perceptible economy.

ROYAL EDINBURGH HOSPITAL FOR SICK CHILDREN

A total of 46,878 children received treatment last year at this hospital. During 1933 3013 cases were treated in the hospital. The average daily number of patients in the hospital during 1933 was 126, and the average duration 14·7 days. The ordinary income (not including legacies or special donations) amounted to £14,308, and the ordinary expenditure to £19,351. The number of in-patients is slightly less for 1933 than for 1932; but there has been a material increase of attendances at practically every branch of the out-patient department. Since the institution of child welfare clinics, which deal admirably with the minor diseases of children in their early stages, the hospital is now concerned almost entirely with acute medical and surgical cases involving greater care and attention from the nursing staff which has had to be increased. The extension of the off-duty hours allowed to nurses and probationers has also necessitated additions to the nursing staff.

ACUTE RHEUMATISM AND SCARLET FEVER

The report of this hospital also gives some interesting figures bearing on the relation between acute rheumatism and scarlet fever. During 1933 there was a very high incidence of acute rheumatic infection; 62 children who had not previously suffered from acute rheumatism, so far as could be ascertained, were admitted to hospital during the year, and a number of old cases readmitted. Now in 1933 there occurred in Edinburgh one of the largest epidemics of scarlet fever which the city has experienced, and it is significant that, coincident with this epidemic, there should have been a marked rise in the incidence of acute rheumatic infection. There is room here for a good deal of research, in view of the evidence that all these diseases are of streptococcal origin.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 2ND, 1934

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 2 (last week 2); scarlet fever, 2314; diphtheria, 1021; enteric fever, 21; acute pneumonia (primary or influenzal), 998; puerperal fever, 39; puerperal pyrexia, 109; cerebrospinal fever, 13; acute poliomyelitis, 8; acute polio-encephalitis, 4; encephalitis lethargica, 7; dysentery, 11; ophthalmia neonatorum, 98. No case of cholera, plague or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on June 11th–12th was as follows: Small-pox, 3 under treatment, 0 under observation (last week 5 and 0 respectively); scarlet fever, 1585; diphtheria, 1705; measles, 1890 (last week 2160); whooping-cough, 283; puerperal fever, 30 mothers (plus 6 babies); encephalitis lethargica, 269; poliomyelitis, 2; "other diseases," 153. At St. Margaret's Hospital there were 18 babies (plus 7 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 43 (11) from measles, 11 (3) from scarlet fever, 35 (7) from whooping-cough, 28 (5) from diphtheria, 40 (11) from diarrhœa and enteritis under two years, and 48 (9) from influenza. The figures in parentheses are those for London itself.

Liverpool reported 4 fatal cases of measles; Barnsley, Gateshead, Newcastle-on-Tyne, Grimsby each 3; no other great town more than 2. Liverpool reported 6 deaths from whooping-cough, Birmingham 5.

The number of stillbirths notified during the week was 278 (corresponding to a rate of 37 per thousand total births), including 44 in London.

PUBLIC HEALTH

The L.C.C. Consultant Service

THE scheme to provide a consultant and specialist service in hospitals under the jurisdiction of the London County Council came into partial operation in July of last year and into full operation in October. The list of consultants and specialists participating in this scheme has since been published with the number of weekly sessions allocated to each; during the last few months 197 of the 223 weekly sessions authorised have actually been held. Last Tuesday the Council reviewed the existing arrangements and decided that they do not call for radical amendment at present but should be continued at all events up to the end of the present calendar year. It is noteworthy that, although in March, 1933, scales of salaries were approved for full-time consulting physicians and surgeons, no appointment has been made of either, although two medical superintendents act as part-time specialists, as and when required, with additional remuneration. The appointment however of a full-time consulting radiologist is now being considered. The weekly sessions are shortly to be still further increased; the authorised total of 223 sessions will apply to the group service as a whole without limitation of any particular type of consultant. Some minor readjustments are to be made. Extra remuneration is to be given for emergency visits when a consultant's total visits exceed the number for which he has been engaged; the fee suggested is £2 12*s.* 6*d.* a visit. The same arrangement applies to part-time otologists and to thoracic surgeons, in the latter case the fee being £3 3*s.* a visit. In view of the fact that whole-time radiologists are not generally employed on Sundays, it is proposed to form a rota of consulting radiologists willing to undertake Sunday duty. The employment of refractionists to relieve the consulting ophthalmologists is contemplated when the alternative would be the employment of a new consultant for a weekly session; the refractionist costs £95 a year for one session a week against the ophthalmologist's £125. Special anæsthetists have been called in as required at a fee of £2 2*s.* a session and this fee is now to replace the existing fee of 34*s.* for general anæsthetic purposes, which is regarded as too low. Thoracic surgeons are paid double fees for visits and consultant anæsthetists attending them are to have the same concession. At the Edmonton and Brentwood colonies need has arisen for regular supervision by a consulting neurologist, who will pay fortnightly visits to each colony at a salary of £125 a year. At the Lambeth Hospital Sir Comyns Berkeley on ceasing to be director of the X ray and radium units becomes hon. gynæcological surgeon, with an assistant employed for three sessions a week at £275 a year. For the children's hospitals at Carshalton and the Downs visits of a consulting general surgeon and consulting physician at monthly intervals are to be remunerated at £2 12*s.* 6*d.* a session. Finally the arrangement whereby the tuberculosis officers of the metropolitan boroughs are deemed to be hon. consultants for tuberculosis in the general hospitals is to be continued.

Recommendations under the Mental Treatment Act

The Board of Control has issued a list, revised up to May, 1934, of medical practitioners in England and Wales approved by the Board for the purpose of making recommendations under Section 1 (3) and 5 (3) of the Mental Treatment Act, 1930. An alphabetical list contains the names, qualifications, and addresses of about 2800 practitioners, and is followed by a local list of the cities and towns where they can be found. The new list, which takes the place of a previous list issued in October, 1932, can be obtained on application from H.M. Stationery Office or the Secretary of the Board of Control, Caxton House West, Tothill-street, London, S.W.1.

PANEL AND CONTRACT PRACTICE

Benefits for Married Women

IT is now more than a year since the sickness benefit for married women was reduced from 12*s.* to 10*s.* a week, and disablement benefit from 7*s.* 6*d.* to 5*s.* a week, and it would be instructive to compare the 1933 figures with those of 1932. In one society to whose figures the *National Insurance Gazette* has had access, claims from married women have fallen off, expenditure on them having been reduced by 34 per cent. It does not pay so many married women, the *Gazette* remarks, to claim benefit at the lower rate. Our readers will recall that before these reductions took place married women's claims were more than 100 per cent. above those expected when the actuarial calculation was made; the reduction stated in the case of the society quoted will hardly make the financial position sound. Combined expenditure on sickness and disablement benefits of this society averaged 12*s.* per head for men, 14*s.* per head for spinsters and widows, and 22*s.* 6*d.* for married women. Since both classes of women pay the same contributions in stamps—the married women often pay for a shorter period when contributions cease after marriage—it does not seem fair division between the two classes. The married women's claims are in fact about 61 per cent. higher than those of other women. Insurance is often obtained by women after marriage for employment that is almost nominal; they can claim insurance if they work only one day or even one hour a week. The healthy may not bother to do so, whereas those likely to be unfit insist on it with their employers. In these cases the women's earnings can only be little if at all higher than sick pay when on the funds; they then have more time for their house duties which they are often able to do. This means that there is little inducement for the woman to declare off if she can persuade the doctor to give her a certificate. If the woman's husband is ill or unemployed she becomes the breadwinner, and as such is a genuine worker under the Act, but those who only work a few hours a week should not be considered as employed persons for the purpose of the Act. There is already a provision to exclude from insurance certain classes of work (e.g., cinematograph employees) involving less than a stipulated number of hours per week. The genuine worker, married or single, is penalised by unfair demands upon the funds. This is shown by the number of women's societies which have no funds left with which to pay ophthalmic, dental, or other additional benefit. The *Gazette* finds it definitely unjust that a minority of exorbitantly high claims by married women should deprive other insured women of benefits they might reasonably expect to enjoy.

Medical men might bear these considerations in

mind when attending the casual-worker housewife for rheumatism or backache. They have a duty to their other insured patients as well as to the one who is receiving attendance and claiming benefit at the moment.

On Buying a Practice

Newly qualified practitioners often find difficulty in raising money with which to buy a partnership or a practice. To do this they are too apt to have recourse to firms who will advance the money without investigating whether the practice is good or not from the purchaser's point of view. The young practitioner may then find himself in possession of a practice in which the income does not enable him to pay off his liabilities to the lender as well as to provide him with a livelihood. We have already pointed out where this may lead.[1] The practitioner is forced to break his agreement with the moneylender, who is then in a position to intimate to the insurance committee his resignation from the panel and to nominate some other doctor to take over his patients. The situation for him is then disastrous; he has no money and someone else has his patients. Unfortunately such experiences are not uncommon, and hitherto insurance committees have not felt able to intervene. The Insurance Acts Committee has now received information from the clerks to a number of insurance committees who receive instruction from young practitioners to pay their quarterly cheques to Messrs. X Y Z. To deal with this situation it was reported at the May meeting that there is in process of completion by the Insurance Acts Committee a scheme for the advance of money to suitable applicants somewhat similar to that now working with regard to life insurance. One advantage of such a scheme would be that, as in the case of certain mutual benefit societies, the practice for which the applicant required the loan would be investigated by professional men familiar with such work, and the applicant would have the satisfaction of knowing that his practice is regarded as a bona-fide proposition. The terms of the loan too are not likely to be so onerous.

[1] THE LANCET, 1933, ii., 1325.

Arch Supports Again

The decision of the referees as to such supports being splints was discussed by representatives of the Insurance Acts Committee with the Ministry, when it was apparently decided to give up the attempt to define a splint. The object of a definition would of course be to make it clear what the chemist has to supply at the cost of the drug fund. In place of such a definition a list is to be drawn up of certain splints which will come within the category; those not listed will have to be obtained by the patient from a surgical instrument maker, with the help of money, if available, from additional benefit funds. From time to time no doubt additions will be made to the list; the procedure will prevent such difficulties as have arisen in the case of arch supports. Insurance practitioners not infrequently order on a prescription form appliances—e.g., a truss—which are not on the schedule of appliances which may be so ordered. When such a prescription gets to the pricing bureau the insurance committee pays the chemist who supplied the truss and recovers the money to do so from the doctor—who is apparently not permitted to reclaim from the patient. It hardly seems fair that the doctor should bear this expense when, if he had known the appliance was not in the schedule and he had ordered it on a piece of paper, the patient would have had to obtain it and pay for it in the best way he could. This matter also is to be discussed with the Ministry.

Health Insurance in America

Although the American Medical Association is still officially opposed to any form of national health insurance, the Michigan State Medical Society has had before it a recommendation to adopt the principle. The House of Delegates before accepting the recommendation sent its speaker, Dr. H. A. Luce, and Dr. Nathan Sinai, chairman of the committee on medical services, to make a study of the English system. On their report the medical profession in Michigan is now committed to the principle of health insurance provided that its administration is under the control of the medical profession.

CORRESPONDENCE

THE LATE SIR WALTER FLETCHER

To the Editor of THE LANCET

SIR—The public life of this country suffered a loss of more than common magnitude through the death of Sir Walter Morley Fletcher, K.B.E., M.D., F.R.S., first Secretary of the Medical Research Council, on the 7th June, 1933. He was then in his sixtieth year, and in the height of those powers which he had used without stint in the service of science and of mankind. The ideal that he held before him, in words which were frequently upon his lips, was the advancement of knowledge for the relief of human suffering. He strove ever towards this, both in his years at Cambridge as a brilliant investigator and an influential teacher of youth, and later in the administration of the public support provided for medical research and in measures for bringing the results of scientific work more effectively to the assistance of the State.

Walter Fletcher gave richly to the common weal, and it is proper that some worthy tribute of an enduring kind should be paid to his memory. The desire to take part in this will be widespread among those who were able truly to appreciate his great labours in the cause of medical science, and will be felt not least by the many research workers who were directly indebted to him for help and inspiration; it will extend, also, to others in different spheres of life who were privileged to enjoy that friendship for which he had so great a gift, and throughout a wider circle of those who admired his vigorous personality and his mastery of practical affairs.

It is considered that the tribute should consist in the first place of a personal memorial, and secondly, of the inception of some scheme for the furtherance of the cause which Sir Walter Fletcher had so much at heart. It is therefore proposed first to commission a portrait bust, to be placed in a suitable setting in the entrance hall of the National Institute for Medical Research at Hampstead. The remainder of the sum collected will then be used as a fund for building—at the farm premises of the National Institute at Mill Hill—a Walter Fletcher Laboratory, to be devoted particularly to those nutritional studies in which he was so keenly interested. This will not only provide an appropriate memorial, but it will make an urgently needed contribution to the national equipment for work in what is at present among the most important of all branches of medical research.

In view of the wide utility and public value of the second part of the memorial, it has not been thought

desirable to suggest for individual subscriptions any limit such as might have been fitting for a tribute of a purely personal character. It is strongly hoped, however, that this will in no way deter those who may wish to have a share in the personal memorial but are of necessity restricted to giving quite small sums. All subscriptions should be sent to the Secretary, Fletcher Memorial Fund, 38, Old Queen-street, Westminster, S.W.1.

We are, Sir, yours faithfully,

STANLEY BALDWIN	C. J. MARTIN
F. G. HOPKINS	T. R. ELLIOTT
D'ABERNON	ROBERT MUIR
MILDMAY OF FLETE	HARRIETTE CHICK
C. S. SHERRINGTON	G. M. TREVELYAN
ALAN GREGG	M. R. JAMES
DAWSON OF PENN	A. E. BOYCOTT
H. J. WARING	H. H. DALE
	E. MELLANBY.

London, June 7th.

FURUNCLE OF THE AUDITORY MEATUS

To the Editor of THE LANCET

SIR,—Every nose, throat, and ear specialist has amongst his patients a number of sufferers from furunculosis of the external auditory meatus. Whilst not dangerous either to life or to hearing, the trouble assumes importance from the fact that the pain is excruciating and calls for immediate relief. My experience has led me to formulate a few "dont's":

1. Don't use hydrogen peroxide.
2. Don't use strong glycerin of carbolic drops.
3. If there is nothing to syringe out in the ear do not syringe.
4. Avoid solutions of mercurochrome.

Hydrogen peroxide does not relieve pain and its use paves the way for other furuncles to develop. Glycerin of carbolic damages healthy skin around the furuncle and renders it more liable to infection. Syringing pushes infective material further into the meatus and gives rise to a deeper and ten times more painful boil. If there is a big mass of cerumen, with or without otomycosis (a trouble very common in the tropics), then it is wise to syringe out the mass after preliminary instillation of warm phenol in paraffin (1 in 400). Mercurochrome colours everything deep red and makes the day-to-day watching of the condition difficult.

I have found the following treatment successful in about 500 cases and can thoroughly recommend it. It consists of the application of an ointment locally, followed by the putting in of drops, preceded by radiant heat.

℞ 1. Zinc oxid. grs. 90. Adip. benz. ʒi.	℞ 2. Hydrarg. perchlor. gr. ¼. Cocain. hydrochlor. grs. 5. Atrop. sulph. gr. ¼. Tinct. aconit. ℥v. Glycerin ʒi.

Take a small mustard spoon and half fill it with the ointment, heat it to boiling-point over a flame, and allow it to cool. With a suitable wooden applicator and sterile cotton-wool dab the still liquid ointment on the furuncle and the parts around until well covered by a thick layer of the ointment. If there is much swelling at the meatal entrance the liquid ointment may be poured in. After three hours apply radiant heat from a lamp at a distance of 30 in. for thirty minutes. Early in the application fill up the ear completely with the drops, leaving them in for at least three minutes. Repeat the radiant heat and drops every six hours. Give internally aspirin grs. 5–10 every four hours and an adalin tablet at bedtime repeated after five hours. After 24 hours swab out the ointment gently with phenol paraffin and re-apply.

Within four days almost all the pain and much of the swelling will have disappeared. Now change the drops to hydrarg. perchor. gr. ¼ in glycerin ʒi night and morning for a fortnight. If there is adenitis, antiphlogistine poultices will quickly bring down the inflammation.—I am, Sir, yours faithfully,

Bombay, May 17th. W. H. VAKEEL.

PEPTIC ULCER

To the Editor of THE LANCET

SIR,—I should like to make three corrections to the report of my opening speech at the Fellowship of Medicine debate on the treatment of peptic ulcer which appeared in your last issue.

1. Lord Moynihan did not contend ten years ago that an ulcer large enough to be demonstrable by the X rays could not be cured except by operation, but he told me that he had not yet seen radiological evidence that such an ulcer could be cured.

2. All symptoms and radiological signs of an enormous gastric ulcer had disappeared at the end of three months in the test case with which I convinced Lord Moynihan; there has been no recurrence in the ten years which have since elapsed.

3. I did not say that I had never seen perforation after proper medical treatment for a sufficiently long time, but that I had never seen perforation occur in a patient whilst under strict medical treatment.

I am, Sir, yours faithfully,

ARTHUR F. HURST.

New Lodge Clinic, Windsor Forest, June 11th.

THE HEALTH OF NURSES IN TRAINING

To the Editor of THE LANCET

SIR,—You recently published figures regarding the incidence of illness among nurses at St. Bartholomew's Hospital (THE LANCET, Jan. 13th, 1934, p. 91). It may be of interest to record the experiences of the last three years at the Royal Free Hospital.

With a daily average of 125 nurses for the whole period, the average daily deficiency on account of illness was:—

1931	..	..	..	4·78 per cent.
1932	..	..	..	2·21 ,, ,,
1933	..	..	..	1·90 ,, ,,

making 2·9 per cent. average daily deficiency for three years. The incidence of sickness among first year nurses was high in each year and formed 50 per cent. of the total in the three year period, second year nurses accounting for 26 per cent. and third year nurses 24 per cent.

At the Royal Free, as at St. Bart.'s, a high proportion of the illnesses were due to throat infections and their complications; also there was more illness in the winter than in the summer.—I am, Sir, yours faithfully,

DOROTHY C. HARE,
Physician to the Royal Free Hospital.

Weymouth-street, W., June 10th.

A GRAVE PROTEST

The Proprietors of THE LANCET, LD.

DEAR SIRS,—On page 1254 of THE LANCET dated 9/6/34 there is a paragraph about me. It is correct so far as culled from the "Medical Directory" and "Kelly's Directory."

A sine qua non of such a notice is the death of the subject, and I submit to you "I am not dead, never have been, and that I am in no earthly hurry."

In regard to this paragraph I will be glad to hear from you what you mean to do.

I am yours faithfully,

JAMES TAYLOR.

Ugie House, Keith, Banffshire, June 10th.

*** We offer sincere apologies for the sad error which was due to a series of misunderstandings. We are aware of the pain as well as inconveniences which might follow upon such a mistake and hope that no such results in this case have occurred.—ED. L.

ANAEROBIC CULTURE OF FÆCES

To the Editor of THE LANCET

SIR,—In 1926 a case was sent to me clinically diagnosed as suffering from some bacterial toxæmia. The Ministry of Pensions, with whom I subsequently had some correspondence on the case, stated that no infection had been demonstrated—and in fact my aerobic culture of the fæces showed nothing of importance. But anaerobic culture showed a streptococcal infection, and on a vaccine of this the patient got quite well.

I have examined a number of similar cases since then. One has some points of interest. He was clinically suspected of duodenal ulcer. X ray was negative. Aerobic culture showed a definite streptococcal infection of the fæces. On a vaccine of this the patient improved up to a point, after which this vaccine produced no further improvement. Anaerobic culture of the fæces was then undertaken and showed a definite infection with anaerobic streptococci. The first dose, a vaccine of these, produced a sharp reaction in the patient, and this vaccine led to an immediate and complete cure. During the treatment the patient himself commented on the fact that the second vaccine was doing him far more good than the first.

Another perhaps worth mentioning was a severe case of menorrhagia of puberty resistant to all previous treatment. A bacteriological examination of swabs of vagina and cervix had already been reported negative. Anaerobic culture showed a heavy infection of streptococci. Anaerobic culture of fæces showed the same streptococci, as far as could be presumed from the appearance of the colony. With this evidence in hand X ray examination was undertaken and showed a diseased appendix. The appendix was removed and a vaccine of the anaerobic streptococci was given. A complete cure resulted.

I think these cases are worth reporting to suggest that greater success with vaccines might be obtained if anaerobic culture was more frequently employed in a case suspected of intestinal toxæmia, when aerobic culture is negative or the aerobic vaccine is only partly successful.

I am, Sir, yours faithfully,

C. B. DYSON,
Assistant Bacteriologist, Inoculation Department,
June 11th. St. Mary's Hospital, Paddington.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Arc-Lamp Carbon Duty

IN the House of Commons, on June 4th, when the Finance Bill was being considered in committee, Mr. DAVID GRENFELL moved an amendment to provide that the new customs duty on arc-lamp carbons should be 1*s.* 6*d.* a lb. for carbons exceeding 14 mm. in diameter, instead of 5*s.* as proposed in the Bill. He feared that this high duty would curtail facilities in connexion with hospitals.—Sir PERCY HARRIS supported the amendment. The consulting engineer of St. Bartholomew's Hospital had told him that as a result of long and laborious experiments he had found that the imported article was the only carbon that could be relied on to give perfect treatment without risk or danger to the patient and to the satisfaction of the doctor. It was not, he said, a question of price, because the continental carbon was more expensive; it was bought because it was more satisfactory.

Dr. BURGIN, Parliamentary Secretary to the Board of Trade, said that when this matter was last before the committee (April 26th) the Chancellor of the Exchequer said that before the question came before the House again there would be ample opportunity to consider representations, and on behalf of the Board of Trade he had offered to give attention to any fresh considerations. There had been, in fact, no response to that invitation. It was estimated that arc-lamp carbons taken by hospitals were something under 2 per cent. of the total consumption of carbons. Assurances had been given to the Government that British manufacturers were in a position to supply the whole requirements of the country, and undertakings had been given that the price of British carbons would not be increased. If consumers desired to use foreign carbons they would have to pay the duty on them.

The amendment was negatived by 243 votes to 45.

Children and the Unemployment Bill

In the House of Lords, on June 5th, Lord ROCHESTER, Paymaster-General, moved the second reading of the Unemployment Bill, which has already passed through the House of Commons.—Lord MARLEY said the B.M.A. committee on nutrition had reported that to feed a child of 1 to 2 years of age the minimum sum necessary per week was 2*s.* 8*d.*, for a child of 3 to 6 years 3*s.* 4½*d.*, for a child from 8 to 10 years of age 4*s.* 2*d.* This Bill allowed only 2*s.* Even if they gave a child one pint of milk a day only, and nothing else, that would come to 1*s.* 9*d.* a week. The sum provided in the Bill was, he felt, utterly inadequate, and meant then the continuation of the under-nourishment of children in order to provide for the solvency of the Unemployment Insurance Fund. The Labour party were opposed to this Bill root and branch.—Lord ELTON suggested there was ground for optimism in Sir George Newman's observation that during 1932, in the period of deepest depression, the two most characteristic tests of malnutrition—infantile mortality and deaths from tuberculosis—had not only decreased, but were the lowest on record. Malnutrition undoubtedly existed, and had done so under all Governments, but they hoped that this Bill was likely to decrease it.

Milk-supply and Public Health

In the House of Commons, on June 7th, Mr. ELLIOT, Minister of Agriculture, moved the second reading of the Milk Bill. The main objectives before the Government, he said, were to secure an increased consumption of pure liquid milk in this country, to secure the confidence of the public in the purity of its milk supplies, and thirdly, to hold the position while those two campaigns were got under way by advances for manufacturing milk. The Bill did not refer specifically to the provision of milk in schools, but it had been announced by him in February last that the Government would only make grants in aid of an approved programme of publicity to be submitted by a Milk Marketing Board if the programme contained among other things provision for the supply of milk to schools at reduced rates. That assurance stood. The objections which had been raised to the Bill were, first, that the Government were encouraging the production of milk products in preference to the increase in the consumption of fresh milk, and secondly, that they failed to make adequate provision for the eradication of disease from cattle.

To take the second point first, he was assured by his technical advisers that in the provisions which the Government were now making they were proceeding as rapidly as was reasonable considering the supplies, both of men and money, available for the eradication of disease from our herds. The programme laid down by the Cattle Diseases Committee envisaged a plan covering a considerable length of time. For instance, on pasteurisation they suggested that large municipalities ought to have the right to require that after two years' notice all milk, except sterilised milk, sold within their boundaries which was not derived from herds free from tuberculin should be pasteurised, but that the power to exercise the right should be deferred for three

years, making a total of five years before they would consider it was possible to arrange for any large supply of tubercle-free cattle. The Government programme providing for the payments of premiums to attested herds should bring them perhaps a thousand herds in the first year, but the difficulty of providing and maintaining these herds was so considerable that any rapid expansion in the provision of this stock was unlikely.

But quite apart from lack of men and money, a general campaign of slaughter of infected cows in this country was out of the question because of the lack of milk which would ensue. If they were to start on this very big programme they must have the assurance of continuity, and that assurance he thought they had. The cost of carrying out the proposals brought forward by the Opposition for the supply of milk to children in the public elementary schools would be vastly greater than that of the Government's proposals. They had to deal with the stress upon the industry as well as the desirability of providing milk in the schools.

Sir S. CRIPPS then moved an amendment :—

That whilst this House is of opinion that the wider distribution of a pure and efficient milk-supply is an urgent necessity, it cannot assent to the Second Reading of a Bill which is designed to encourage the production of milk products in preference to an increase in the consumption of fresh milk amongst the children in public elementary schools and at a price within the reach of the poorer households, and which, in view of the recent report of the Economic Advisory Council, fails to make adequate provision for the eradication of disease from cattle.

In the course of debate Sir ERNEST GRAHAM-LITTLE said he would support the amendment because he thought it appeared to offer that practical stimulus to consumption which should precede any other factor in the Bill. The urgency of distributing milk to school-children ought to determine their action that night. There could be no immediate supply if they were to wait for the cleaning up of the herds, which in any case could not be applied to every disease derived from milk. Milk was the best medium for the growth of the tubercle bacillus, and milk tanks were practically uniformly infected with tubercle. People asserted that pasteurisation destroyed the value of the milk, but that was probably an entirely fallacious statement. It was obviously wrong to distribute a product which could cause widespread disease, and must cause it if there was no economical method of rendering that product safe and clean. It had become the opinion of the medical profession that to distribute milk of any kind in the fresh state was unwise. There was freedom from tubercle in tuberculin-tested milk, but no freedom from other infections. He believed that the distribution of milk in bulk, as was now immediately possible, would result in the improvement of nutrition of the children, and at a relatively small expense pasteurisation would secure their safety from any disease infecting that milk.

The amendment was rejected by 190 votes to 47, and the Bill was then read a second time.

Road Accidents

When the Road Traffic Bill was being further considered by a Standing Committee of the House of Commons on June 7th, Mr. GUY moved the following new clause :—

(1) Where medical or surgical treatment or examination is immediately required as a result of bodily injury (including fatal injury) to any person caused by, or arising out of, the use of a motor vehicle on a road, or in a place to which the public have a right of access, and the treatment or examination so required (in this section referred to as "emergency treatment") is effected by a registered medical practitioner, the owner of the vehicle shall, on a claim being made in accordance with the provisions of the next succeeding section, pay to the practitioner, or, where emergency treatment is effected by more than one practitioner, to the practitioner by whom it is first effected—

(*a*) a fee of twelve shillings and sixpence in respect of each person in whose case the emergency treatment is effected by him ; and

(*b*) a sum, in respect of any distance in excess of two miles which he must cover in order to proceed from the place whence he is summoned to the place where the emergency treatment is carried out by him and to return to the first-mentioned place, equal to sixpence for every complete mile and additional part of a mile of that distance.

(2) Where emergency treatment is carried out in a hospital (that is to say, an institution, not being an institution carried on for profit, which provides medical or surgical treatment for in-patients) the provisions of the foregoing subsection with respect to the payment of a fee shall have effect with the substitution of references to the hospital for references to a registered medical practitioner.

(3) Liability incurred under this section by the owner of a vehicle shall, where the event out of which it arose was caused by the wrongful act of another person, be treated for the purposes of any claim to recover damage by reason of that wrongful act as damage sustained by the owner.

(4) A policy of insurance or a security in respect of third-party risks shall not be deemed to comply with the requirements of Part II. of the principal Act unless the owner of the vehicle to which it relates is specified therein for the purposes of paragraph (*b*) of Subsection (1) of Section 36, or of Section 37 of the said Act, as the case may be, and, notwithstanding anything in the proviso to paragraph (*b*) of Subsection (1) of the said Section 36, any liability which may be incurred under this section by the owner shall be deemed to be a liability required to be covered under that paragraph.

Last year, he said, Parliament provided certain payments to hospitals in the Road and Rail Act, but no provision had been made for emergency treatment by doctors or the hospitals for first aid. The fee of 12*s.* 6*d.* mentioned in the clause was, he thought, a reasonable one. The proposal was that payment should be made irrespective of any question of negligence. His information was that the total cost of this first-aid treatment and the payment in respect thereof would be in the neighbourhood of £250,000, or probably less. This would mean an additional insurance premium of something like 2*s.* 6*d.*

Sir ERNEST GRAHAM-LITTLE, speaking for King Edward's Hospital Fund for London and the British Hospitals Association, supported the new clause which, he understood, was to follow the clause at present before the Committee.

Mr. OLIVER STANLEY (Minister of Transport) said that everybody recognised the great hardships caused to doctors by the additional calls to road accidents and the extreme difficulty they had in getting payment for their services, but it was only right that hon. Members should realise that they were altering the principle that a man was liable only for his own negligence. Up to now the whole of insurance had been on that basis, and he feared the effect of extending it.

The new clause was read a second time by 14 votes to 9 and was added to the Bill. The committee when it met on June 12th agreed to an amendment to this clause proposed by Mr. STANLEY providing that liability for payment for emergency treatment should be placed on the user of the vehicle at the time that the accident occurred. It was, he said, advisable to follow the provision of the Act of 1930, which attributed the provision of third party risk to the user and not the owner of a motor vehicle, and not to attach to the owner new and different risks which he was not at present compelled to cover by insurance. Doctors and hospitals, he added, would not suffer in any way by confining their claim to the person using the vehicle at the time of the accident.

A new clause moved by Sir FRANCIS FREMANTLE providing machinery for the recovery of claims on the part of doctors and hospitals was also read a second time and added to the Bill.

HOUSE OF COMMONS

THURSDAY, JUNE 7TH

Water Shortage in England

Mr. BERNAYS asked the Minister of Health whether he was in a position to make a statement on the water shortage in England.—Mr. SHAKESPEARE (Parliamentary Secretary to the Ministry of Health) replied : My right hon. friend is advised that the position over a large part of the country, the north and east, Wales and the west and the south-west, as well as part of the Midlands, is generally better than it was a month ago. The south and

south-east have not shared in the improvement. He has no reason to think that water undertakers will not be able to meet the situation, provided consumers play their part by reasonable economies in the use of water. The coöperation so far given by them accounts largely for improved conditions. In rural areas with defective supplies, the authorities should expedite measures for permanent schemes, with the grant available under the Rural Water Supplies Act.

Mr. JOEL asked the Minister of Health the number of empty or relatively empty reservoirs now in this country and the towns which normally relied on such reservoirs; and the precautions being taken to safeguard the well-being of the townsfolk affected.—Sir HILTON YOUNG replied: I am not aware of any empty or relatively empty reservoirs. In some areas reserves are seriously low. Active steps have been taken in these areas to conserve supplies, with the coöperation of consumers, and to augment the supplies. Where further powers are necessary these can be obtained expeditiously by procedure under the Water Supplies (Exceptional Shortage Orders) Act recently passed.

Kilmainham Hospital Trust

Captain CUNNINGHAM-REID asked the Financial Secretary to the War Office when it was anticipated that the trust relating to Kilmainham hospital would be closed finally.—Sir FREDERICK THOMSON (Treasurer of the Household) replied: I regret that I am unable to say.

Blood Tests for Inebriates

Mr. HALES asked the Home Secretary if he was aware that in Sweden a blood test was taken of a person charged with drunkenness; and, having regard to the satisfactory results therefrom, if he would consider the desirability of taking steps to introduce the same procedure into this country.—Sir JOHN GILMOUR replied: I am aware of the test to which my hon. friend refers. Evidence derived from a blood test is sometimes given in this country in cases where drunkenness is an element in a criminal charge, but I have no power to require any person to submit to such a test.

Factories Report

Mr. RHYS DAVIES asked the Home Secretary when the report for the last year of the chief inspector of factories and workshops would be issued.—Sir JOHN GILMOUR replied: I hope the report will be issued by the middle of next month.

MONDAY, JUNE 11TH

Doctors' Telephones in Remote Country Districts

Sir ROBERT HAMILTON asked the Postmaster-General what the rental charges would be under the proposed new scale for a doctor's telephone in a country district in Shetland, now charged at £12 per annum.—Sir KINGSLEY WOOD replied: I understand the hon. Member to refer to a subscriber who does not come within the ordinary tariff conditions but pays a specially assessed rental. The question whether any rental reduction can be made in such cases is under consideration.

State Inspection of Private Schools

Mr. ERNEST EVANS asked the Parliamentary Secretary to the Board of Education whether His Majesty's Government accepted in principle the recommendations of the departmental committee on private schools in favour of State inspection of such schools and the acquiring by the State of power to compel the closing of any such schools as might be found to be unsatisfactory; and whether he proposed to introduce legislation designed to effect such objects and, if so, when.—Mr. RAMSBOTHAM replied: As indicated in the answer given on March 29th, 1933, there can be no question of proceeding in the near future with the legislation which would be required to give effect to the main recommendations of this committee. I regret, therefore, that I am not at present able to inform the hon. Member of the views of His Majesty's Government on the various recommendations of the committee.

OBITUARY

GEORG WALTHER GRODDECK

To a circle of friends and patients in many countries the death of Dr. Groddeck, of Baden Baden, in his 68th year, will bring a sense of irreparable loss. It comes at the moment when his methods and philosophy were beginning to attract public attention in England both in the world of medical psychology and in the field of general literature. He brought to his psychotherapeutic works the creative vision of the artist—almost all his early writings were literary works, fiction, poetry, belles-lettres, criticism—as well as long experience with cases of chronic disease of every kind, for his sanatorium at Baden Baden was the refuge of any patient who had been abandoned by others as impossible to help.

Groddeck's earlier methods were based on those of Schweninger, Bismarck's physician, under whom he studied at the university and whom he afterwards assisted in practice. Little use was made of drugs; his regimen included dieting, local applications of heat and deep massage given by the doctor himself. In "Das Buch vom Es" he recounts how the curious symptoms of a patient first led him to realise the influence of unconscious forces in producing disease. He gradually came to the theory of unconscious motivation in every kind of disease, and step by step elaborated a technique of psychotherapy which he tested on all his patients. Massage and heat he never abandoned, but dieting seemed to him less and less important as his psychological work developed. In 1917 the publication of a brochure upon mental factors in the determination of organic disease led to his friendship with Freud, whose work he never wearied of extolling in everything he wrote, and later to his joining the Psycho-Analytical Society, of which Freud was then president. He never however abandoned his independent outlook nor his own developing technique.

Three years ago he suffered from a severe illness which left him physically exhausted, and although he still opened his sanatorium for the summer months each year, it was obvious that the work imposed a heavy strain upon his strength. On Whitsunday he was obliged to give it up and on June 11th he died in his sleep in a sanatorium near Zurich.

WILLIAM SIMMS, L.D.S. R.C.S. Irel., M.Sc. Manch.

THE death was announced recently of Mr. William Simms, a well-known figure in the world of dentistry and at one time dean of the dental school of the University of Manchester.

William Simms was born in 1856 and entered dental practice, as was common 50 or 60 years ago, as an apprentice. Under the Dentists Act of 1878 he was registered as qualified, being recognised at the passing of the Act as engaged in bonâ-fide practice of dentistry, but two years later he obtained by examination the diploma of L.D.S. R.C.S. Irel. He was early to display a scientific interest in the development of his branch of the profession by writing on the uses of cocaine in dentistry, the employment of which as a local anæsthetic was at that time an innovation. He became interested in prosthetic work and recently produced a Manual of Dental Prosthetics, a résumé of his experience throughout a long period, for it was not published till he was over 70 years of age. He was responsible for the shape of the curriculum for the dental degree at Manchester, and as clinical teacher, lecturer, examiner, and dean of the Dental School he was a valuable member of the teaching staff of the University. In 1930 the University conferred on him the degree of Hon. M.Sc.

MEDICAL NEWS

University of Cambridge

On June 8th the following degrees were conferred :—

M.B., B.Chir.—H. T. Cox (by proxy), W. R. Billington, R. V. Payne, H. D. White, William Wilson, and J. L. Parker.
B.Chir.—E. J. Neill and W. E. Tucker (by proxy).

The title of the degree of M.D. has been conferred on Mrs. A. G. Dauncey.

University of London

At recent examinations the following candidates were successful :—

THIRD EXAMINATION FOR M.B., B.S.

Honours.—(*a*) R. H. R. Belsey, St. Thomas's Hosp.; (*a*, *d*) E. W. Bintcliffe, St. Bart.'s Hosp.; (*b*, *d*, University Medal) Edith J. R. Browne, Roy. Free Hosp.; (*b*) A. M. R. Cann, Middlesex Hosp.; (*c*) D. R. Davies, Univ. Coll. Hosp.; (*c*) R. R. Henderson, St. Thomas's Hosp.; (*a*) E. G. Jones, St. Bart.'s Hosp.; (*a*) L. E. Jones, St. Thomas's Hosp.; (*b*) Beryl Twyman, Univ. Coll. Hosp.; and (*c*) Sylvia V. F. Wolfe, Roy. Free Hosp.

(*a*) distinguished in medicine; (*b*) distinguished in pathology; (*d*) distinguished in surgery; (*c*) distinguished in obstetrics and gynæcology.

Pass.—Mary A. C. Adams, Roy. Free Hosp.; J. L. Bates, Guy's Hosp.; Mary A. M. Bigby, Roy. Free Hosp.; Eileen A. Chennell, St. Mary's Hosp.; J. A. Chivers, St. Bart.'s Hosp.; J. G. R. Clarke, St. Thomas's Hosp.; Doris Cohen and Beryl D. Corner, Roy. Free Hosp.; C. F. Critchley, St. Thomas's Hosp.; E. A. Danino and D. M. Dean, St. Bart.'s Hosp.; C. B. Dharmasena, Ceylon Med. Coll. and St. Bart.'s Hosp.; Israel Doniach, Univ. Coll. Hosp.; O. G. Edholm, St. George's Hosp.; R. T. Elven, Guy's Hosp.; Nancie I. Faux, Roy. Free Hosp.; Constance E. Field, Univ. Coll. Hosp.; J. M. Flower, Westminster Hosp.; H. E. D. Gale, St. Bart.'s Hosp.; C. J. Gavey, London Hosp.; Nathan Green and J. T. Griffiths, Univ. Coll. Hosp.; Hilary Gunton, Roy. Free Hosp.; R. M. Haines, Westminster Hosp.; S. T. Hayward, St. Bart.'s Hosp.; Alice M. Head, Roy. Free Hosp.; G. F. Henderson, Univ. Coll. Hosp.; E. F. Hewlitt, Guy's Hosp.; A. C. Howard, Univ. Coll. Hosp.; H. C. Hugh, St. Bart.'s Hosp.; N. M. Jacoby, Guy's Hosp.; Elizabeth M. James, Roy. Free Hosp.; Margaret H. James, Univ. Coll. Hosp.; H. W. E. Jones and W. S. G. Lawson, St. Thomas's Hosp.; H. B. Lee, St. Bart.'s Hosp.; Rosamund M. I. Mackay, Univ. Coll. Hosp.; G. A. Mais, St. Thomas's Hosp.; S. F. Mason and P. H. Nankivell, Middlesex Hosp.; Doris E. Oxford, Roy. Free Hosp.; Harold Royle, St. Bart.'s Hosp.; G. C. Sawyer, Guy's Hosp.; Margaret H. Scott, Roy. Free Hosp.; Charlie Seeley, St. Mary's Hosp.; H. L. Selwyn and Ralph Shackman, St. Bart.'s Hosp.; J. V. Shemilt and D. G. Snell, St. Thomas's Hosp.; W. P. Stamm, Guy's Hosp.; M. G. Stratford, Univ. Coll. Hosp.; Mary G. Tate, Roy. Free Hosp.; W. P. McK. Telfer, St. Bart.'s Hosp.; T. P. Thamotheram, Ceylon Med. Coll. and King's Coll. Hosp.; Elisabeth J. McQ. Thomas, A. S. Thorley, and W. W. Walther, Univ. Coll. Hosp.; S. H. Wass, Guy's Hosp.; and Elizabeth B. White, Roy. Free Hosp.

The following students have passed in one of the two groups of subjects :—

Group I.—S. H. Alavi, St. Thomas's Hosp.; G. W. Bender, St. Mary's Hosp.; D. M. Blomfield, St. Bart.'s Hosp.; J. A. Brocklebank and I. A. Cathie, Guy's Hosp.; Enid S. Davies, Univ. Coll. Hosp.; Audrey P. Dence, Roy. Free Hosp.; D. G. H. Edward, St. Bart.'s Hosp.; Evelyn J. Forgan, Roy. Free Hosp.; W. T. J. Fowler, Guy's Hosp.; Joan I. Franklin-Adams, Roy. Free Hosp.; D. B. Hyslop, Charing Cross Hosp.; A. D. Iliff and F. A. Jones, St. Bart.'s Hosp.; Margaret M. C. Louden, Roy. Free Hosp.; J. I. Maran, Univ. Coll. Hosp.; G. D. Morgan, Charing Cross Hosp.; Barbara G. Morton, Roy. Free Hosp.; F. E. Norris, London Hosp.; D. S. Piper, Guy's Hosp.; Irene E. Sandford, Roy. Free Hosp.; K. G. Seager, St. Mary's Hosp.; H. W. G. Staunton, St. Bart.'s Hosp.; D. L. McK. Stewart, King's Coll. Hosp.; H. A. Thomas, Univ. Coll. Cardiff and Univ. Coll. Hosp.; Sarah C. B. Walker, Roy. Free Hosp; and M. E. Wigfield, St. Thomas's Hosp.

Group II.—H. H. Atkinson, Univ. Coll. Hosp.; E. A. Bisson, London Hosp.; Muriel Boycott, Univ. Coll. Hosp.; D. J. T. Brinkworth, Middlesex Hosp.; Robert Bruce, King's Coll. Hosp.; Ronald Carpenter and R. F. Clarke, St. Bart.'s Hosp.; C. W. J. Claydon, King's Coll. Hosp.; D. W. A. Degazon, Univ. Coll. Hosp.; Lynette Dowsett, Roy. Free Hosp.; H. D. Fairman, London Hosp.; E. D. Falconer, Guy's Hosp.; T. F. R. Griffin, St. Mary's Hosp.; A. W. J. Houghton, St. Bart.'s Hosp.; Joyce B. Jewson, Roy. Free Hosp.; W. L. Kerr and G. A. Kiloh, King's Coll. Hosp.; J. R. Kingdon and K. A. Latter, St. Bart.'s Hosp.; Sidney Lee, Westminster Hosp.; C. F. Mayo-Smith, St. George's Hosp.; R. H. Purnell and D. C. Reavell, St. Bart.'s Hosp.; J. D. Richardson, King's Coll. Hosp.; A. T. Roden, St. Bart.'s Hosp.; Catherine L. Simmons, Roy. Free Hosp.; B. W. Smith, Guy's Hosp.; M. C. L. Smith, St. Bart.'s Hosp.; E. J. Somerset, King's Coll. Hosp.; W. H. C. Spooner, St. Mary's Hosp.; K. F. Stephens, St. Bart.'s Hosp.; Margaret E. Sutherland, Roy. Free Hosp.; R. E. Thomas, Univ. Coll. Hosp.; W. F. Townsend-Coles, London Hosp.; R. J. Vakil, St. Thomas's Hosp.; and E. C. Zorab, Guy's Hosp.

University of Sheffield

The title of emeritus professor has been conferred on Dr. Edward Mellanby, F.R.S., secretary to the Medical Research Council, and formerly professor of pharmacology in the University.

Mr. John Keall has been re-elected president of the Pharmaceutical Society of Great Britain for another year.

THE Department of Health for Scotland state that from June 25th the headquarters of the dental officer for Scotland will be transferred to 136, Renfield-street, Glasgow, C.2.

University of Wales

The Cecil Prosser research scholarship (value £250) will shortly be awarded for research in the department of tuberculosis. Further particulars will be found in our advertisement columns, and applications should reach the registrar at the University Registry, Cathays Park, Cardiff, not later than Sept. 1st.

Scottish Board of Control

Dr. William N. J. Chapman has been appointed a deputy commissioner of the General Board of Control for Scotland. Dr. Chapman is at present assistant medical officer to the Lanark district asylum, Hartwood.

Anti-Noise League

A conference will be held by this league in University College, Oxford, from July 13th to 16th under the chairmanship of Lord Horder. The work of the conference has been arranged under four heads: Dr. William Collier is chairman of the health and noise group and the speaker is Dr. Dan McKenzie, while Sir James Purves-Stewart will preside over the science and noise group and Dr. G. W. C. Kaye will speak. During the conference an exhibition will be held displaying noise-measuring instruments, noise-abatements appliances, and examples of sound-proofing and absorption, &c. The secretary of the league may be addressed at 18, Old Cavendish-street, London, W.1.

Cancer Hospital (Free), London

In March, 1933, the International Cancer Research Foundation, established by Mr. William H. Donner of Philadelphia, awarded a sum of £1000 per annum for a period of two years to the research institute of this hospital in support of investigations into factors which underlie the origin of malignant growths. This grant has provided two research scholarships, which are held by Mr. G. A. D. Haslewood, M.Sc., who is working with Mr. J. W. Cook, D.Sc., and by Miss Edna Roe, B.Sc., who is studying the molecular structure of carcinogenic compounds by physical methods under Mr. W. V. Mayneord, M.Sc., in the physics section of the radiological department of the hospital. Under the direction of Mr. Cook, Mr. Haslewood has recently prepared a very active cancer-producing compound, methylcholanthrene, from another compound, deoxycholic acid, which is known to occur in the human body. To assist in further developments of this work the trustees of the foundation have decided that this grant shall be continued for an additional three years.

British Social Hygiene Council

The summer vacation school in connexion with this council will be held at Digswell Park Conference House, Welwyn Garden City, from Monday, June 25th, to Saturday, June 30th. The programme is designed to present the scientific background of social hygiene as a coherent whole and will consist of three courses, of five lectures each, on (1) anthropology, by Dr. Raymond Firth, lecturer on the subject at the London School of Economics; (2) biology, by Mr. D. Ward Cutler, deputy-director, Rothamsted; and (3) psychology, by Prof. A. E. Heath, professor of philosophy, Swansea. The lectures will deal with the fundamental principles of the subjects as related to the problems of daily life both at home and abroad. It is hoped that magistrates, clergy, doctors, and probation officers will take advantage of this opportunity of studying the scientific bases of marriage and their bearing on conjugal relationships. The vacation school will be inaugurated by an address from Prof. F. A. E. Crew, director of the Institute of Animal Genetics at Edinburgh. In connexion with the school the membership fee is a guinea and the boarding fee £2 7*s.*, while railway fares are those of the summer tickets now in force. Various facilities are being provided for recreation and amusement free of charge, and information on these and other subjects may be obtained from Miss Grant, Secretary, British Social Hygiene Council, Carteret-street, London, S.W.1.

Appointments

BOWN, D. G., M.B., B.S. Lond., F.R.C.S. Eng., has been appointed Certifying Surgeon under the Factory and Workshop Acts for Clacton, Essex.

GODDARD, CHARLES E., O.B.E., M.D. Durh., T.D., whole-time Medical Officer to the enlarged district of Wembley.

ORLEY, ALEXANDER, M.D. Geneva, D.M.R.E. Camb., Honorary Assistant Radiologist to the West End Hospital for Nervous Diseases.

London County Council Hospital Staff.—The following appointments, promotions, and transfers are announced. A.M.O. (I.) and (II.) = Assistant medical officer, Grades I. and II. Temp. = temporary.

LESLIE, W., M.B., F.R.C.S., Senior A.M.O. (II.), St. Stephen's.
CLOUGH, G. M., M.B., Ch.M. Sydney, M.R.C.P. Lond., Temp. A.M.O., St. James's.
CRITCHLEY, C. F., M.R.C.S. Eng., Clinical Assistant, St. Giles.
JAMES, M. F., M.B. Lond., House Physician, Queen Mary's Hospital for Children.
MCDADE, R. S. C., M.B. Camb., A.M.O. (I.), High Wood Hospital for Children.
MURRAY, M. G., M.B. Aberd., A.M.O. (I.), St. George-in-the-East.
MACDONALD, C. R., F.R.C.S., M.B. Edin., A.M.O. (I.), St. Leonards.
BROWN, W., M.B. N.Z., A.M.O. (II.), New End.
RUTTER, T. E., M.B. Edin., A.M.O. (II.), Highgate.
KAINES, G. E., M.B. Melb., A.M.O. (II.), Dulwich.
EVANS, J. G., M.R.C.S. Eng., A.M.O. (II.), Fulham.
CARDWELL, E., L.R.C.P. Edin., A.M.O. (II.), St. Benedict's.
AVERY, J. C. H., M.B. Lond., A.M.O. (I.), Queen Mary's Hospital for Children.
DEVLIN, W. L., M.B. Belf., A.M.O. (II.), Norwood Hospital for Children.
O'SULLIVAN, J. A., M.D. Dubl., A.M.O. (I.), St. Peter's.
WRIGHT, E. M., B.M. Oxon., A.M.O. (I.), Brook.
YOUNG, B. A., M.D., M.R.C.P. Lond., Senior Assistant Medical Officer (I.), St. Peter's.
SPURGIN, P. B., M.R.C.S. Eng., Temp. Visiting Medical Officer, St. Marylebone Institution.

Vacancies

For further information refer to the advertisement columns

Albert Dock Hospital, Connaught-road, E.—Res. M.O. At rate of £110.
Bagdad, Royal College of Medicine.—Chair of Materia Medica. Salary at rate of I.D. 960 to I.D. 1200 per annum.
Birmingham Children's Hospital.—Res. Surg. O. £175.
Birmingham City.—P.H. Dept., Sen. Asst. M.O. for Tuberculosis Section. £750.
Blackburn Royal Infirmary.—Res. Cas. O. £150.
Bolton Royal Infirmary.—H.P. £200.
Bradford Children's Hospital.—Hon. Asst. Surgeon.
Brighton, Royal Sussex County Hospital.—Two Hon. Med. Regs., Three Hon. Surg. Regs., and Hon. Dermatological Clin. Asst.
Bristol Eye Hospital.—Asst. Res. H.S. At rate of £100.
Bristol General Hospital.—Sen. Res. M.O. £200. Cas. H.S. At rate of £100. Also Two H.P.'s., Two H.S.'s., Res. Obstet. O., and H.S. to Spec. Depts. Each at rate of £50.
Bristol, Winford Orthopædic Hospital.—Hon. Dental Surgeon.
Cardiff, University College of South Wales and Monmouthshire.—Asst. Lecturer in Anatomy. £400. Asst. Lecturer in Physiology. £400. Asst. Lecturer in Histology. £300.
Cardiff, Welsh National School of Medicine.—Part-time Demonstrator in Materia Medica, &c. At rate of £50.
Central London Ophthalmic Hospital, Judd-street, W.C.—Sen and Jun. H.S.'s. £120 and £100 respectively.
Charterhouse Rheumatism Clinic, Crosby Row, Long-lane, S.E.—Two Hon. Clin. Assts.
Chesterfield and North Derbyshire Royal Hospital.—H.S. At rate of £150.
Colchester, Essex County Hospital.—H.P. £150.
East Ham Memorial Hospital, Shrewsbury-road, E.—Hon. Ophth. Surgeon.
Exeter, Royal Devon and Exeter Hospital.—H.S. to Ear, Nose, and Throat Dept. At rate of £150.
Folkestone Royal Victoria Hospital.—Sen. and Jun. Res. M.O.'s. At rate of £150 and £120 respectively.
Gloucestershire Royal Infirmary, &c.—H.P. and H.S. Each at rate of £150.
Great Yarmouth General Hospital.—H.S. £140.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S. At rate of £100.
Hull Royal Infirmary.—Cas. O., also Third H.S. Each at rate of £150.
Ilford, King George Hospital.—Cas. O. £130.
Indian Medical Service.—Commissions.
Ipswich, East Suffolk and Ipswich Hospital.—H.P. £120.
King's College Hospital, Denmark Hill, S.E.—Hon. Radiologist.
Liverpool, Alder Hey Children's Hospital.—Res. Asst. M.O. £200.
Liverpool, City Infectious Diseases Hospitals.—Asst. Res. M.O. £200.
London Homœopathic Hospital, Great Ormond-street, Bloomsbury, W.C.—Res. M.O. At rate of £100.
London Jewish Hospital, Stepney Green, E.—Hon. Surgeon.
London University.—Examinerships.
Manchester, Christie Hospital and Holt Radium Institute, Withington.—Res. M.O. At rate of £150.
Manchester Royal Eye Hospital.—Jun. H.S. £120.
Metropolitan Hospital, Kingsland-road, E.—Cas. O. At rate of £100.
Middlesex County Council.—Tuberculosis M.O. £750.
Ministry of Health.—Two Medical Officers. Each £833.
Nelson Hospital, Merton, S.W.—Res. H.S. At rate of £100.
Newcastle-upon-Tyne Hospital for Sick Children.—Res. Surg. O. £250.
Newcastle-upon-Tyne Royal Victoria Infirmary.—Two Anæsthetists to Leazes Hospital. Each at rate of £100. Also H.P.'s and H.S.'s to Special Depts. Each at rate of £50.
New Zealand, Wellington Hospital Board.—£1100.
Northampton General Hospital.—H.S. to Ear, Nose, and Throat Dept. At rate of £150.
Norwich, Norfolk and Norwich Hospital.—H.S. to Spec. Depts. £100.
Nottingham Children's Hospital.—Res. H.S. At rate of £150.
Portsmouth Royal Hospital.—H.P. and H.S. Each at rate of £130.
Preston County Mental Hospital, Whittingham.—Jun. Asst. M.O. £500.
Princess Elizabeth of York Hospital for Children, Shadwell, E.—H.P., and H.S. Each at rate of £125.
Prince Louise Kensington Hospital for Children, St. Quintin-avenue, W.—H.P. and H.S. Each at rate of £100.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Two Res. Anæsthetists. Each at rate of £100.
Queen's Hospital for Children, Hackney, E.—Surgeon for Ear, Nose, and Throat Dept.
Reading, Royal Berkshire Hospital.—H.S. £150.
Royal Masonic Hospital, Ravenscourt Park, W.—Res. M.O. £300. Also Res. Surg. O. At rate of £250.
Salford Royal Hospital.—Dist. M.O. for Pendleton Area. £200.
Scarborough Hospital and Dispensary.—H.S. At rate of £175.
Sheffield Children's Hospital.—H.S. Also H.P. Each at rate of £100.
Shrewsbury, Royal Salop Infirmary.—Cas. O. and Res. Anæsthetist. At rate of £160.
Smethwick County Borough.—Asst. M.O.H. and Asst. School M.O. £500.
Southampton, Royal South Hants and Southampton Hospital.—H.P., Cas. O., Res. Anæsthetist, and H.S. for Ear, Nose, and Throat Dept. H.S. Each at rate of £150. Also Sen. H.S. £200.
Southend-on-Sea General Hospital.—Hon. Visiting Obstet. and Gynæcological Surgeon.
Stamford, Rutland and General Infirmary.—H.S. At rate of £200.
Stockport Infirmary.—H.S. £150.
Tunbridge Wells, New Kent and Sussex Hospital.—Res. Surg. O. £250. Sen. H.S. £175. Second H.S. £150. Also Jun. H.S. £125.
Wales University.—Cecil Prosser Research Scholarship. £250.
Weir Hospital, Grove-road, Balham, S.W.—Jun. Res. M.O. £150.
West Bromwich, Hallam Hospital.—Res. H.P. At rate of £200.
Wigan Royal Infirmary.—H.S. At rate of £150.
Willesden General Hospital, N.W.—Cas. O. and H.S. Each at rate of £100. Also Clin. Assts. to Out-patients' Dept.
Wolverhampton Royal Hospital.—H.S. for Orthopædic and Fracture Dept. At rate of £100.
Woolwich and District War Memorial Hospital, Shooter's Hill, S.E.—H.P. and H.S. Each at rate of £100.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Carluke, Lanark; Warrington, Lancs; Torrington, Devon; and at Chesham, Bucks.

A vacancy for a Medical Referee under the Workmen's Compensation Act for the Great Malvern, Hay, Hereford, Ledbury, and Leominster County Court Districts is announced. Applications should be addressed to the Private Secretary, Home Office, Whitehall, London, not later than July 3rd.

Births, Marriages, and Deaths

BIRTHS

HEELY.—On June 3rd, at Chudleigh, Devon, the wife of Dr. W. J. Heely, of a daughter.

JAMIESON.—On June 8th, at Ventnor Villas, Hove, Sussex, the wife of A. M. de la M. Jamieson, M.B., Ch.B., of a son.

PANTING.—On June 7th, the wife of L. J. Panting, B.Ch., St. Olaves, Bradford-on-Avon, of a daughter.

ROBERTS.—On June 3rd, at Staunton Lodge, Kingsbridge, Devon, the wife of Dr. W. H. Roberts, of a son.

MARRIAGES

WANDLESS—REES.—On June 9th, at the Congregational Church, Witham, Essex, Denis J. Wandless, L.D.S., R.C.S. Eng., to Dorothy Mary Rees, daughter of the late Rev. J. Gilbert Rees and Mrs. W. J. Perry, of Little Braxted Hall, Essex.

WICKSTEED—MACGREGOR.—On June 8th, at Carnwath, Lanarkshire, Dr. O. H. Wicksteed to Jean C. MacGregor, M.A.

WILLIAMSON—MADDEN.—On June 9th, at All Saints, Hove, James Charles Frederick Lloyd Williamson, F.R.C.S., to Helen Francis, third daughter of Captain and Mrs. C. H. Madden, of "Sussex Lodge," Shoreham.

DEATHS

HOLFORD.—On June 11th, at "Ravensdene," Sutton, Surrey, Walter Stanley Holford, M.R.C.S., L.R.C.P., L.D.S., aged 67.

TWINING.—On June 6th, at Wood End, Ryde, I.W., Vincent Wing Twining, M.B., C.M., late of Salcombe, S. Devon, in his 74th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

FRACTURE OF THE NECK OF THE FEMUR

THE three-flanged nail designed by Smith-Petersen for accurate retention of the fragments in fracture of the neck of the femur is enjoying a large measure of popularity in surgical clinics almost throughout the world. The great advantages of the Smith-Petersen method as compared with other forms of internal splinting are first the very firm hold secured by the blades of the nail, which altogether prevents rotation of the fragments, and secondly the firm impaction obtained by hammering over the great trochanter with the nail already retaining the fracture in the reduced position. Dr. Thomas King, while aware of all these advantages, points out (Med. Jour. Australia, Jan. 6th, 1934, p. 5) that the wide exposure of the joint which has been found necessary by most surgeons for accurate introduction of the nail is the one great objection to its use. He has, therefore, in the University of Melbourne, worked out a technique by means of which the Smith-Petersen nail can be introduced with precision along the neck of the femur through the fracture and into the head of the bone by what is practically a subcutaneous operation. The essentials of the method are (*a*) that there should be complete reduction of the deformity, (*b*) that the vertical neck-shaft angle and the forward (or backward) torsion of the neck of the femur in the reduced position must be known before introduction of the nail, while (*c*) a nail is used which is pierced through its centre and is introduced by threading it along a wire previously inserted in the bone as a guide.

The reduction of the fracture takes place by traction on an orthopædic table, both lower limbs being fixed in extension, equally abducted at an angle of 60°–90°. External rotation is corrected by forward thrust of the greater trochanter by the hand, and the foot-piece is adjusted to maintain the corrected position. A Kirschner wire is introduced, with proper aseptic technique, 2 inches below the tip of the great trochanter and on its posterior aspect. It is pushed inwards close to the posterior aspect of the neck of the femur, midway between its upper and lower borders, until the end of the wire strikes the fracture site. Direct vision through a fluorescent screen is used to guide the wire at the correct level and to negotiate it past the fracture up to the acetabular rim. The wire thus introduced acts as an indication to the direction of the neck of the bone and to the angle at which it joins the shaft. A second wire is now introduced by the special drill used for inserting Kirschner wire, and is made to take the precise direction desired for the subsequent insertion of the nail. It is drilled into the bone about an inch further than the first wire, but not further at first than 4 inches, in case it should enter the pelvis. X ray pictures taken in two planes determine the direction and the depth of penetration of the wire. If necessary the wire can be drilled further, for it must obtain a good hold on the head of the bone.

If the position of the wire relative to the head and neck of the femur is satisfactory, the insertion of the nail is proceeded with. A starter (which is an abbreviated but strong nail) is first used to make the insertion of the Smith-Petersen nail easier, and to prevent damage to its blades. The starter is slipped off the wire and the nail slipped over. The depth of introduction is known from the length of wire previously used. Once the nail has entered the head of the bone, traction on the limb is relaxed, the Smith-Petersen impactor is slipped over the nail head, and its outer end is hit with gentle and repeated blows to drive the ends of the fracture into one another. The wound is sutured and the dressing secured with mastic gum. Weight extension of about 10 pounds is used with the limb supported on a sling or splint. At the end of six weeks the patient may walk on a calliper splint, or, alternatively, earlier weight-bearing may be allowed by the use of a short spica bandage of plaster-of-Paris round the pelvis and thigh. Seven patients have been treated by this special technique, but as a few weeks only had elapsed since operation no pronouncement is possible on its ultimate effect. Judging by the known success of internal fracture by the Smith-Petersen nail, a high proportion of good results is anticipated.

Mr. B. H. Burns has evolved a method similar in principle, and has used it in 12 cases (Proc. Roy. Soc. Med., March, 1934, p. 581). Three Kirschner wires are inserted through an incision over the outer aspect of the greater trochanter, each wire being passed through the neck into the head of the bone in what appears to the operator to be the most suitable direction. A radiogram is taken to show which wire is most accurately placed, and the Smith-Petersen nail is passed over the wire and driven home. The other wires are then extracted.

NATIONAL BABY WEEK COUNCIL

IN its annual report for 1933, the seventeenth year of its existence, the National Baby Week Council records an increase of activity and influence. Since baby shows appear to be gaining in popularity, it is satisfactory to learn that the majority of them are conducted in accordance with the Council's regulations, the chief of which is that judging must be carried out by medical practitioners well qualified in the examination of infants and young children. During the year for the first time the Council added a "talkie" to its list of films, bringing the total up to twelve. A display of propaganda films given in the Kingsway Hall was attended by 2500 people. The overseas work is one of the Council's most useful activities. Largely through the Imperial Baby Week Challenge Shield the movement is spreading to more and more parts of the Empire, and is including in its scope some of those remote districts peculiarly in need of education.

The special subject advocated for propaganda this year is "The Making of an A 1 Nation," with particular emphasis on the importance of good nutrition for expectant and nursing mothers, infants, and toddlers. Baby Week is, as usual, being celebrated in the first week of July, and the National Conference on Maternity and Child Welfare is to be held in the Town Hall, Birmingham, from July 3rd to 5th.

MENINGITIS DUE TO GÄRTNER'S BACILLUS

A CASE of purulent meningitis attributed to the *Bacillus enteritidis* of Gärtner is described by H. G. Rupert (Nederl. tijdschr. v. geneesk., 1934, lxxviii., 1763). The patient, aged three months, and previously healthy, was brought to hospital with a history of convulsions for one week, accompanied by fever. On examination it was found that Kernig's sign was strongly positive, the anterior fontanelle was bulging and tense, the reflexes were somewhat accentuated, the ears and throat normal. The temperature was normal, but after admission rose to 104·5°, remaining high until the fifth day, when death took place, shortly before which the temperature fell to 99°. The pulse-rate remained at about 160 throughout. Lumbar puncture showed that the cerebro-spinal fluid was under great pressure and turbid, and contained numerous polymorphonuclear leucocytes and masses of Gram-negative bacilli, which on further examination were found to be *B. enteritidis*. The same organism was grown from the fæces, but none were found in the blood or urine. The blood-serum was found to agglutinate the patient's own organisms in a dilution of 1 : 250, and another strain of Gärtner's bacillus in a dilution of 1 : 50. The fæces of the other members of the household were examined, but the organism was not discovered. The child's father was a butcher, and it is suggested that he, through being in contact

with infected meat, may have been the source of the infection.

Gärtner's bacillus as a cause of suppurative meningitis was reviewed in our columns last November by Dr. F. H. Stevenson and Dr. L. K. Wells (THE LANCET, 1933, ii., 1084), who reported a case of their own. In many of the reported cases the condition has been preceded by some other manifestation such as cholecystitis or cystitis due to this organism. The exact path of infection in the present case remains obscure.

POST-GRADUATE OPPORTUNITIES IN HUNGARY

ON behalf of the Hungarian Medical Postgraduate Committee, Dr. Joseph Baló has sent us the third edition he has brought out of an official guide-book to the medical faculties of Hungarian universities and the public hospitals of Budapest. There are 4520 beds at the service of medical and postgraduate training, and in addition 21,534 hospital beds in large public hospitals where teaching and scientific work is also carried out. Prof. Emil de Grósz is president of the postgraduate committee, and all the teaching is conducted in English, German, or French. The universities which offer opportunities are at Budapest, Szeged, Pécs, and Debrecen; there is also the Apponyi Polyclinic and the hospital of the Jewish community of Pest. A few years ago three important medical institutions were opened almost at the same time: the Institute of Biological Research at Tihany, the State Hygiene Institute promoted with a grant from the Rockefeller Foundation, and the central hospital of the National Institute for Social Insurance. Foreign physicians are invited to call at the headquarters of the Hungarian Medical Postgraduate Committee, VIII. Mária-utca, 39, Budapest.

ROSE DE MAI

A RECENT editorial article upon Natural Perfumes (THE LANCET, June 2nd, p. 1181) aroused some doubt as to what plant is known as rose de mai, which the following information received from Monsieur Moutet answers. Rose de mai is imported from Bulgaria and the name is unlikely to be found in any dictionary. The hawthorn is useless from the point of view of the perfumer. A May scented rose perfume is obtained by the use of synthetic essences. The species of rose de mai used is *R. centifolia*.

LINES FROM A G.P.

Dr. JOHN WISHART writes: "If Dr. F. C. Nicholls gets a book called 'Life,' written—curious to say—by Dr. W. Nicholl, and published in *1841*, he will find therein the whole of 'Lines from a G.P.' It is also to be found, in full, in 'A Whiff of Old Times,' published by Wright of Bristol."

THE LÖWENSTEIN-JENSEN CULTURE MEDIUM.—Dr. Evelyn M. Holmes writes: "May I correct an erroneous impression given in the report of my remarks at the Congress of the Royal Institute of Public Health (THE LANCET, May 26th, p. 1139). I did not say that *sputum*, but pleural, ascitic, and other fluids, even urine on occasion, will give pure cultures on the medium I described for tubercle work without any previous treatment. It is possible that portions of purulent sputum would do so but I have never tried it. Such sputum would probably be microscopically positive and hence not call for culture, unless for the interest of typing."

SCHOOL OF DIETETICS.—The Royal Infirmary of Edinburgh is opening a new school of dietetics in September, 1934, and there are vacancies for students in September, 1934, and April, 1935. The course lasts two years for State-registered nurses and one and a half years for students with two years' domestic science training. It is expected that hospitals inaugurating dietetic departments will send selected nurses from their staff to attend the course. Particulars may be had from the lady superintendent of nurses at the infirmary.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, June 19th.—5.30 P.M., General Meeting of Fellows.

THURSDAY.

Dermatology. 5 P.M. (Cases 4 P.M.) Dr. J. E. M. Wigley: 1. Prurigo. Sir Aldo Castellani: 2. Tinea Imbricata (Tokelau)—previously shown. Dr. Robert Klaber: 3. Sarcoid.

FRIDAY.

Obstetrics and Gynæcology. 8.15 P.M. Registrar's Pathological Meeting. Mr. David M. Currie: Cervical Myoma. Cæsarean Section: Myomectomy. Miss E. M. Shippam: Chorion Epithelioma of Uterus Clinically Simulating Ruptured Ectopic Pregnancy. Mr. John Beattie: Uterus and Ovaries Removed for Chorion Epithelioma on the Evidence of Aschheim-Zondek Reaction. Mr. David M. Stern: Pregnancy and Labour after Hypophysectomy with Reference to Aschheim-Zondek Reaction. Mr. Arthur C. Bell: Round-celled Sarcoma involving Cervix and Corpus Uteri and Fallopian Tubes. Mr. Douglas MacLeod: Botyroid Sarcoma of Cervix Uteri. Mr. R. K. Bowes: Bilateral Cortical Necrosis of Kidneys. Pregnancy Toxæmia. Mr. W. C. W. Nixon: Uterus. Hysterectomy for Concealed Accidental Hæmorrhage. Mr. W. R. Winterton: Ectopic Pregnancy in a Fallopian Tube Implanted for the Relief of Sterility.

SATURDAY.

Disease in Children. Summer Meeting at Oxford by invitation of Mr. G. R. Girdlestone. Train leaves Paddington 12.15 or 12.30 P.M. 2.20 P.M., Demonstration of medical and surgical cases at the Wingfield Morris Orthopædic Hospital. Return train arrives Paddington 7.28 P.M.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, Manson House, 26, Portland-place, W.

THURSDAY, June 21st.—8.15 P.M., Annual General Meeting, followed by a paper by Dr. L. W. Hackett, Assistant-Director of the International Health Division, Rockefeller Foundation, on the Present Status of our Knowledge of the Races of *Anopheles maculipennis*. There will be a demonstration illustrating the subject at 7.45 P.M.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, June 18th, to SATURDAY, June 23rd.—LONDON LOCK HOSPITAL, 91, Dean-street, W. Afternoon Course in Venereal Disease.—PRINCE OF WALES'S HOSPITAL, Tottenham, N. All-day Course in Medicine, Surgery, and the Specialties.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Lecture-demonstration on Renal Insufficiency, at 2.30 P.M., on Tues. by Dr. Clark-Kennedy.—PANEL OF TEACHERS. Individual clinics in various branches of medicine and surgery are available daily. Courses of instruction, clinics, &c., arranged by the Fellowship of Medicine are open only to Members and Associates.

NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W.

THURSDAY, June 21st.—9 P.M., Dr. Robert Hutchison: Praise and Dispraise of Doctors. (Macalister Lecture.)

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

Daily, 2 P.M., Medical and Surgical Clinics, Operations.

MONDAY, June 18th.—10 A.M., Medical Wards. Pathological Demonstration. 11 A.M., Surgical Wards. 2 P.M., Gynæcological and Surgical Wards, Eye and Gynæcological Clinics.

TUESDAY.—10 A.M., Medical Wards. 11 A.M., Surgical Wards. 2 P.M., Throat, Nose, and Ear Clinic. 4.15 P.M., Lecture, Mr. Green-Armytage: Sterility.

WEDNESDAY.—10 A.M., Medical and Children's Wards, Children's Clinic. 2 P.M., Eye Clinic.

THURSDAY.—10 A.M., Neurological and Gynæcological Clinics. 11.30 A.M., Fracture Demonstration. 2 P.M., Eye and Genito-urinary Clinics.

FRIDAY.—10 A.M., Skin Clinic. 12 noon, Lecture on Treatment. 2 P.M., Throat Clinic. 4.15 P.M., Lecture, Dr. Owen, The New-Born Infant.

SATURDAY.—10 A.M., Medical and Surgical Wards, Children's and Surgical Clinics. The lectures at 4.15 P.M. are open to all medical practitioners without fee.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James' Hospital, Ouseley-road, Balham.

WEDNESDAY, June 20th.—4 P.M., Mr. V. Z. Cope: Demonstration of Surgical Cases.

UNIVERSITY OF BIRMINGHAM.

TUESDAY, June 19th.—3.30 to 5 P.M. (at the General Hospital), Mr. Beatson Heard: Demonstration of Ophthalmic Cases.

FRIDAY.—3.30 to 5 P.M. (at the Queen's Hospital), Mr. J. N. Sankey: Demonstration of Physiotherapeutic Measures in Surgical Cases.

LEEDS GENERAL INFIRMARY.

TUESDAY, June 19th.—3.30 P.M., Dr. Moll: Demonstration of Medical Cases.